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1988

ICHTHYOPLANKTON AND STATION DATA FOR CALIFORNIA COOPERATIVE OCEANIC FISHERIES INVESTIGATIONS SURVEY CRUISES IN 1975

David A. Ambrose Richard L. Charter H. Geoffrey Moser Bradley S. Earhart

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David A. Ambrose Richard L. Charter H. Geoffrey Moser Bradley S. Earhart

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ABSTRACT

This report provides ichthyoplankton and associated station tow data from California Cooperative Oceanic Fisheries Investigations (CalCOFI) cruises conducted off California Baja California in 1975. It is the twenty-first report in series that presents these data for all biological-oceanographic CalCOFI surveys from 1951 to the present. A total of 1592 stations was occupied during eight monthly multivessel cruises over the survey area which extended from Pt. Reyes, California to San Juanico, Mexico, and seaward to several hundred miles. data are listed in a series of 6 tables; the background, methodology, and information necessary for interpretation quantitative analysis of the data are presented accompanying text. All pertinent station and tow data, including volumes of water strained and standard haul factors, are listed in the first table. Another key table lists, by station and month, standardized counts of each of the 153 larval fish categories identified from survey samples. This and previous and subsequent reports make the CalCOFI ichthyoplankton and station data available to all investigators and serve as guides to the newly developed computer data base.

INTRODUCTION

This report, the twenty-first of a series, provides ichthyoplankton and associated station and tow data California Cooperative Oceanic Fisheries Investigations (CalCOFI) joint biological-oceanographic survey cruises conducted in 1975. This program was initiated in 1949, under the sponsorship of the Marine Research Committee of the State of California, to study the population fluctuations of the Pacific sardine (Sardinops sagax) and the environmental factors that may play a role in such CalCOFI, known as the California Cooperative fluctuations. Sardine Research Program from 1949 to 1953, was made up representatives of the South Pacific Fisheries Investigations (SPFI) of the U.S. Fish and Wildlife Service [now the La Jolla Laboratory, National Marine Fisheries Service (NMFS)], Institution of Oceanography (SIO), the California Department of Fish and Game (CDFG), the California Academy and the Hopkins Marine Station of Stanford Sciences (CAS) University. The first three of these agencies supplied ships and personnel to conduct the sea surveys. NMFS processed the plankton samples and analyzed the ichthyoplankton from them. processed and analyzed the hydrographic samples and measurements and also analyzed invertebrate groups from the plankton samples.

The boundaries, station placement, and sampling frequency for the CalCOFI survey area were based on the results of joint biological and oceanographic cruises conducted by NMFS and SIO during 1939-41. Those cruises were designed to collect sardine eggs and larvae and associated hydrographic data over the entire

areal and seasonal spawning range of the species. On these survey cruises, plankton tows were made to 70 m, a depth which encompassed the vertical distribution of sardine eggs and larvae. Wide-ranging joint biological and oceanographic survey cruises were resumed in 1949 with sardine as the focus; however, an increasing interest in other biological components resulted in the deepening of standard tows to 140 m in 1951. This marked the beginning of truly quantitative ichthyoplankton sampling on CalCOFI surveys.

Some data resulting from CalCOFI surveys in 1975 have been published. Hydrographic data (Univ. of Calif., SIO, 1984a,b) were presented in standard formats. Distributional maps of larvae of 2 taxa taken on CalCOFI surveys during 1975 are presented in the CalCOFI atlas series: rockfish (Sebastes spp.), Ahlstrom et al., 1978; and northern anchovy (Engraulis mordax), Hewitt, 1980.

A computer data base for eggs and larvae of sardine and anchovy, for larvae of Pacific hake (Merluccius productus), jack mackerel (Trachurus symmetricus) and Pacific mackerel (Scomber japonicus), and for eggs of Pacific saury (Cololabis saira) was established in 1969. The development of a data base for other fish larvae is a complex undertaking because competency identification has evolved steadily over the past 38 years. began the task of producing a CalCOFI ichthyoplankton data base and associated data report series in 1983. All available original records for 1975 were subjected to an extensive verification and editing process to produce this report. and previous (Ambrose et al., 1987a,b,c; 1988a,b; Sandknop al., 1987a,b; 1988a,b,c; Stevens et al., 1987a,b,c; 1988a,b; Sumida et al., 1987a,b; 1988a,b,c) and subsequent reports make the CalCOFI ichthyoplankton and station data available to all investigators and serve as guides to the computer data base. data base will be modified when additional errors are discovered and when composite taxa from the earlier years are reidentified. These reports are the fundamental reference documents against which subsequent changes in the data base can be compared.

SAMPLING AREA AND PATTERN

In 1975, the seven CalCOFI survey cruises occupied stations during portions of all months except April, August, and September. An eighth cruise (7412), conducted in November and December of 1974, was included in the 1975 data base. A total of 1592 stations was included in this data base, with an average of 199 stations per cruise (range 50-279). Coverage of the survey station pattern varied among cruises and the entire survey area was not covered on any single cruise (Figures 1-10, Table 1). The area off northern California (lines 40-57) was not covered. All major lines were occupied off central California (lines 60-77) on 7412, 7501, 7503, 7507, and 7511; only three lines were occupied in this region on 7505. The area between Pt. Conception, California, and Pt. San Juanico, Baja California

(lines 80-137) was occupied on 7412, 7501, 7507, 7510 and 7511; southerly coverage of this region stopped at Sebastian Vizcaino Bay (line 120) on 7505 and at Pt. Abreojos (line 130) on 7503. The area off southern Baja California (lines 140-157) was not surveyed in 1975. Typically, coverage did not extend beyond station 90 (approximately 160-260 miles offshore). Cruises 7510 and 7511 in our data base are considered as 7510 in the SIO hydrographic data base and are combined in Figure 9.

Two vessels were employed on these cruises: the David Starr Jordan of NMFS, and the Alexander Agassiz of SIO. The David Starr Jordan was used on seven cruises and the Alexander Agassiz on four (Table 1; Univ. of Calif., SIO, 1984a,b).

After 1969, CalCOFI surveys were made on a triennial basis. These began in 1972 and continued every 3 years (1975, 1978, 1981, 1984) until 1985 when annual surveys were resumed.

SAMPLING GEAR AND METHODS

During 1975, a 1-m diameter ring net was used on all cruises; the net was similar to that used on previous surveys except the fabric was 0.505 mm nylon mesh instead of silk bolting cloth (Smith, 1974). The cod end was constructed of 0.333 mm nylon mesh. The frame was fastened to a short 3-lead bridle connected to several meters of line which attached to the towing cable by a clamp. A current meter was suspended in the center of the mouth of each net to measure volume of water filtered (see Kramer et al., 1972, for further details).

The standard tow in 1975 was an oblique haul to ca. 210 m depth (to 15 m of the bottom in shallow areas) designed to filter a constant amount of water per depth interval (ca. $3\text{m}^3/\text{m}$ of depth) over the vertical range of most ichthyoplankters. Hauls were made at a ship speed of 1.5-2.0 knots and initiated by

CalCOFI lines (Figure 11) are arranged perpendicular to the coastline and extend from the Canadian border (line 10) to below Cape San Lucas, Baja California (line 157). Stations were established on the basis of a perpendicular to line 80 (off Pt. Conception) at a point designated as station 60. Stations were plotted seaward and shoreward from station 60 on each line. Cardinal CalCOFI lines (those ending in "0") are 120 miles apart and usually bracket two ordinal lines (ending in "3" or "7"), so that lines are 40 miles apart over most of the pattern. Cardinal stations are 40 miles apart and typically these are separated by a station number ending in "5" so that stations are 20 miles apart out to station 90 on most lines. Stations are placed at closer intervals near the coast and islands to accommodate these features (see Kramer et al., 1972 for further details).

clamping the net line to the towing cable with the 45 kg terminal weight about 10-15 m below the surface. The net was lowered to ca. 210 m depth by paying out 300 m of wire over a 6 minute period (35 m of depth/min.). After fishing at depth for 30 seconds, the net was retrieved at 20 m/min. (14 m depth/min.). The angle of stray of the towing cable was recorded every 30 seconds and maintained at 45° ($\pm 3^{\circ}$) by adjusting the ship speed and course. After reaching the surface, the net was washed down and the samples preserved in 5% formalin buffered with sodium borate. Flowmeter readings were made at the beginning and end of each tow. Detailed descriptions of gear and methods are given by Kramer et al. (1972), and Smith and Richardson (1977).

LABORATORY PROCEDURES

Laboratory processing began with the determination of a displacement volume for each sample (methods described in Staff, SPFI, 1953 and Kramer et al., 1972). Sorting involved the removal of ichthyoplankton from the sample and identification and separation of: eggs and larvae of Pacific sardine and northern anchovy; larvae of Pacific hake; and eggs of Pacific saury. samples were fractioned into aliquots using a Folsom plankton splitter (McEwen et al., 1954) prior to sorting. Criteria for fractioning were: 1) samples taken at a distance greater than 200 nautical miles from shore were not fractioned, 2) samples taken closer than 200 miles from shore and containing 25 ml plankton or less were not fractioned, and 3) samples taken closer than 200 miles from shore and containing more than 25 ml plankton were fractioned to 50% of their original volume (J. Thrailkill, pers. comm.). Aliquot percentages for fractioned samples from 1975 are listed in Table 1 under the "Percent Sorted" column; 67.9% of samples collected in 1975 fractioned.

A "standard haul factor" (SHF) was calculated for each tow to make them comparable and allow estimations of areal abundance. This factor adjusts the number of eggs or larvae in a haul to the number in 10 m of water strained per meter of depth fished. If the vertical distribution of the species has been encompassed then the adjusted value is equivalent to the number under 10 m of sea surface. The SHF is calculated for each haul by the formula:

$$SHF = 10 D$$

V = total volume of water (m³) strained during the haul

 $V = R \cdot a \cdot p$

where R = total number of revolutions of the current meter during the haul

a = area (m²) of the mouth of the net

p = length of column of water (m) needed to
 produce one revolution of the current
 meter.

Tow depth, volume of water strained, and standard haul factor are listed in Table 1 for each tow taken during 1975. Detailed descriptions of factors involved in calculating these values are presented in Ahlstrom (1948), Kramer et al. (1972), and Smith and Richardson (1977).

IDENTIFICATION

Identification of ichthyoplankton species beyond those separated during the sorting process was carried out by a separate group of specialists. Ontogenetic stages of fishes are inherently difficult to identify and this is further complicated by the large number and diversity of species which contribute to ichthyoplankton of the California Current region. the identifications were accomplished by establishing ontogenetic series on the basis of morphology, meristics, and pigmentation and then identifying these series by relating them to known metamorphic, juvenile, or adult stages with overlapping features (Powles and Markle, 1984). A total of 151 taxa was identified for 1975, with 97 taken to species, 25 to genus, 24 to family, and 5 to order or suborder. In the decade of the 1970's some taxa were identified for the first time. These included larvae of the bathylagid Bathylagus longirostris, the gonostomatids Danaphos oculatus and Valencienellus stellatus, the myctophid Bolinichthys spp., and the trichiurid Lepidopus xantusi. in the families Scopelarchidae and Nomeidae were identified to genus or species. Five species of rockfish in the Sebastes group were also identified: S. aurora, S. jordani, S. levis, S. macdonaldi, and S. paucispinis.

The task of producing a reliable and equitable ichthyoplankton data base required extensive procedures to verify, correct, and edit the original identifications. primary data source was the original identification sheets (see Kramer et al., 1972, for examples); however, a critical resource all phases of this process was the ichthyoplankton collection in which the samples are archived. Throughout the course of CalCOFI ichthyoplankton studies, samples have been identified to the lowest taxon possible. In reviewing these identifications for the data base, our approach has been conservative and we have preserved those identifications and counts which we could confirm, while correcting as many of the errors as possible. After computer entry, taxonomic errors and

inconsistencies in the data base were corrected and the most obvious identification errors were corrected. Our current knowledge of ichthyoplankton techniques coupled with a precise understanding of the development of identification competency in the program over the years allowed us to critically judge the historical records. Identifications were changed to different taxa, lumped to a higher taxonomic category, or given a more precise taxonomic name. In some cases, identifications of a taxon were inconsistent among cruises in a year. These records were made equitable by lumping to the higher taxonomic category to avoid biases that could result in quantitative misinterpretation.

Next, statistical, seasonal, and geographic outliers were identified, employing a series of graphic summaries and listings. Examination of geographic outliers proved to be especially effective because of our accumulated knowledge of distributions. In the course of examining samples for these outliers, other identification errors were discovered eventually all taxa were scrutinized to some extent. certain taxa were reexamined in all samples for the entire CalCOFI time series. These taxa were selected because of their commercial, ecological, phylogenetic, or zoogeographic importance because taxonomic confusion was at the ordinal level. following is a list of the taxa for 1975 which received special attention, with explanations and caveats intended to aid in quantitative interpretations:

- Anguilliformes tentative and sporadic identifications to family or lower taxon lumped to order.
- Sardinops sagax all specimens south of line 120 checked for misidentification of Opisthonema spp.
- Nansenia spp. all specimens checked and identified as N. candida or N. crassa; all specimens of these species near their range boundaries checked.
- Bathylagus spp. includes small and/or disintegrated specimens of Bathylagus or Leuroglossus stilbius.
- Stomiiformes all specimens checked and identified to genus or species; residuals are small, poorly preserved or unavailable specimens.
- Cyclothone spp. tentative and sporadic identifications to species were lumped to genus.
- Vinciguerria lucetia some V. poweriae may remain in these samples because small larvae of the two species could not be

- differentiated; sporadic identification of *V. poweriae* began in 1961.
- Sternoptychidae tentative and sporadic identifications of hatchetfishes to genus were lumped to family.
- Paralepididae all specimens examined and identified to species; residuals are small, poorly preserved or unavailable specimens.
- Scopelarchidae all specimens reidentified to species except Scopelarchus; residuals are a small, poorly preserved specimen and one unavailable specimen.
- Scopelarchus spp. tentative and sporadic identifications to species lumped to genus.
- Lampanyctus spp. tentative and sporadic identifications to species lumped to genus.
- Lampanyctus regalis underrepresented because of inability to differentiate small larvae (<5 mm) from those of other species of the genus; counts may include other species of the genus because of difficulty in identifying larvae of this large and complex genus.
- Lampanyctus ritteri comment for L. regalis applies to this species.
- Diogenichthys atlanticus all specimens at margins of range checked.
- Diogenichthys laternatus all specimens at margins of range checked.
- Hygophum spp. all specimens reidentified to species.
- Hygophum atratum all specimens checked.
- Hygophum reinhardtii all specimens checked.
- Symbolophorus californiensis all specimens south of line 120 checked.
- Ophidiiformes this category did not exist originally and unidentified larvae of this order, including a type referred to as "Zoarcidae", were originally placed in the "blenny" category.
- Chilara taylori all specimens checked.
- Ophidion scrippsae all specimens checked.
- Trachipteridae tentative and sporadic identifications to genus were lumped to family.

Melamphaes spp. - all identifications ascribed to Melamphaidae were reexamined and assigned to genus (Melamphaes, Poromitra) or species (Scopelogadus bispinosus); larvae originally identified as Melamphaes spp. were not reexamined and this category may contain other melamphaid genera.

Anoplopoma fimbria - specimen checked.

Cottidae - all specimens checked.

Oxylebius pictus - all specimens checked.

Zaniolepis spp. - all specimens checked.

- Blennioidei this is the residual of the completely reexamined "blenny" category, which also contained various misidentified ophidiiforms, and is now restricted to members of northern stichaeioid families and true blennioids (other than Hypsoblennius spp.) in the southern part of the pattern).
- Labridae all specimens originally identified to family were reexamined and assigned to genus (Halichoeres spp.) or species (Oxyjulis californica, Semicossyphus pulcher).
- Chromis punctipinnis records south of about line 120 may include other pomacentrid taxa.
- Howella brodiei specimen checked; in this report we list H.

 brodiei in the family Apogonidae for convenience,
 recognizing that its systematic affinities are not resolved.
- Carangidae all specimens checked; tentative and sporadic identifications to genus or species (except *Trachurus symmetricus* and *Seriola lalandi*) were lumped to family.
- Seriola lalandi all specimens checked.
- Gerreidae tentative and sporadic identifications to genus lumped to family.
- Haemulidae tentative and sporadic identifications to genus lumped to family.

Girella nigricans - specimen checked.

Medialuna californiensis - all specimens checked.

Caulolatilus princeps - all specimens checked.

Sciaenidae - tentative and sporadic identifications to genus lumped to family.

- Scombridae all larvae identified to this family or constituent taxa (except *Scomber japonicus*) were reexamined and reassigned; residuals are small, poorly preserved specimens.
- Pleuronectiformes all specimens of this category were reexamined and reidentified.
- Bothidae all specimens examined and reassigned; most were assigned to various paralichthyid genera.
- Citharichthys spp. all larvae identified to species were lumped to genus except C. stigmaeus; category includes larvae of Etropus spp.
- Citharichthys stigmaeus includes larvae larger than ca. 4.5 mm; smaller larvae are in Citharichthys spp.
- Paralichthys californicus all specimens examined.
- Xystreurys liolepis originally misidentified as Paralichthys californicus; all specimens reidentified.
- Glyptocephalus zachirus all specimens examined.
- Hypsopsetta guttulata some specimens were originally identified as Pleuronichthys spp.
- Lepidopsetta bilineata specimens originally identified as Psettichthys melanostictus.
- Microstomus pacificus all specimens examined.
- Pleuronichthys spp. all larvae of this genus and constituent species were examined and assigned to species; residuals are unavailable specimens.
- Psettichthys melanostictus all specimens examined.

COMPUTER ENTRY AND EDITING

Each taxon on the original identification sheets was given a 3-digit code based on the list of codes in Haight et al. (1979). Taxon codes and counts from these sheets were keypunched by cruise and station, along with pertinent station and tow data and entered into the VAX 11/780 computer at the University of California, San Diego, Computing Center. After entries were completed for an entire year, print-out listings of taxa and counts on each station were compared with the original data sheets to eliminate keypunch errors. Next, data in the file were cross-checked with data on an existing file which contained: station and tow data; numbers of eggs of sardine, anchovy, and saury; numbers of larvae of sardine, jack anchovy, hake, and Pacific mackerel; total number of fish eggs; and total number of fish larvae.

Discrepancies in ichthyoplankton data in these two files were corrected by inspecting original records from the sorting laboratory, the original ichthyoplankton identification sheets, and the samples themselves. Station and tow data discrepancies between the two files were corrected by reviewing ships' logs and deck tow sheets, original records from the sorting laboratory, cruise announcements, publications, header information on the ichthyoplankton identification sheets, and station plots generated for each cruise. Eventually all station and tow data were checked by comparing these sources.

The corrected ichthyoplankton data base was then examined statistically and outliers were found and checked as above. Distributional plots were then prepared for each taxon and these were checked by reviewing the data sources mentioned above and by examining archived specimens. A listing of each taxon by station (Table 4) was produced, which became the primary document for subsequent checks. Misidentifications found in geographic outlier checks and other misidentifications and data problems discovered in the course of examining archived samples resulted in several iterations of Table 4. Finally, totals in Table 4 were checked against annual summaries of incidence and abundance (Tables 2 and 3). Ecological analyses of the data were conducted concurrently with editing procedures and provided cross-checks that allowed correction of errors.

SPECIES SUMMARY

Collections made in 1975 were analyzed separately from those taken in November and December of 1974 with respect to the pooled occurrences and counts of larvae (Tables 2A, B; 3A, B). Larvae northern anchovy (Engraulis mordax) represented 72% of all larvae taken on CalCOFI cruises during 1975 and numbered almost 10 times as many as Pacific hake, Merluccius productus, the next most abundant taxon with 7.3% of the total larvae (Table 2b, 3b). Northern anchovy also ranked first in incidence; M. productus ranked 8th. The next most abundant was the rockfish genus Sebastes with 3.9% of the total, followed by the sanddab genus Citharichthys with 3.0%; they ranked 2nd and 4th respectively incidence. The deepsea smelt Leuroglossus stilbius ranked 5th in (2.5%) and 3rd in occurrence. Two myctophids, Triphoturus mexicanus and Stenobrachius leucopsarus, ranked 6th (1.6%) and 7th (1.2%) in number, and 6th and 5th in occurrence. The final 3 taxa in the top 10 collected in 1975 were the croaker family Sciaenidae, with 0.9%, the gonostomatid Vinciguerria lucetia, with 0.7%, and the deepsea smelt Bathylagus ochotensis, with 0.6% of total larvae. These 3 taxa ranked 10th, 16th, and 9th in incidence. The appearance of croaker larvae in the top 10 may reflect the increased number of stations occupied on the shoreward end of each line where these larvae are most abundant. These 10 top taxa contributed 93.5% to the total number of larvae collected in 1975; the remaining 6.5% was distributed among 140 taxa plus the disintegrated and unidentified categories. The top 10 taxa comprised 4 coastal demersal taxa, 1 coastal pelagic species, and 5 midwater species.

Six of the 10 most numerous taxa collected in 1974 (Table 2A) were also among the top 10 in 1975 - Engraulis mordax with 63.4% of the total larvae, Sebastes spp. (9.7%), Citharichthys spp. (3.7%), Vinciguerria lucetia (2.6%), Sciaenidae (2.2%), and Leuroglossus stilbius (2.0%). These six taxa ranked 1st, 3rd, 2nd, 8th, 6th, and 7th in incidence respectively in 1974. Other taxa ranking in the top 10 for 1974 were: 3 myctophids, Diogenichthys laternatus (1.4%), Protomyctophum crockeri (1.4%), and Stenobrachius leucopsarus (1.0%); and a rockfish, Sebastes paucispinis (1.0%). These 10 taxa contributed 87.5% to the total number of larvae collected in the 272 tows during 1974; the remaining 12.5% was distributed among 78 taxa plus the disintegrated and unidentified categories. Of the top 10 taxa, 4 were coastal demersal taxa, 1 was a coastal pelagic species, and 5 were midwater species.

EXPLANATION OF TABLES

- Table 1 This table lists by cruise the pertinent station and data for 1975 (including November and December, 1974), the volume of water filtered and standard haul factor for each tow, the percent of sample sorted, and the total numbers of fish eggs and larvae. cruises are designated by four digits; the first two indicate the year and the second two the month. Within each cruise the data are listed in order increasing line and station number (southerly seaward directions); the order of station occupancy shown on the station charts (Figures 2-10). Stations are designated by two groups of digits; the first set indicates the line and decimal fraction and the second set indicates the station on the line. Time is listed as Pacific Standard Time at the start of each tow 24-hour designation. Methods for determining depth, volume of water strained, standard haul factor, and percent sorted were described in the methods section. The values for total fish eggs and larvae represent raw counts (unadjusted for percent sorted or standard haul factor). Ship codes are as follows: JD, David Starr Jordan; AX, Alexander Agassiz.
- Table 2A- This table lists pooled occurrences of all larval fish taxa taken during November and December of 1974 in ranked order.
- Table 2B- This table lists pooled occurrences of all larval fish taxa taken during 1975 in ranked order.
- Table 3A- This table lists pooled counts of all larval fish taxa taken during November and December of 1974 in ranked

order. Numbers are adjusted for percent sorted and standard haul factors.

- Table 3B- This table lists pooled counts of all larval fish taxa during 1975 in ranked order. Numbers are adjusted for percent sorted and standard haul factors.
- Table 4 This table gives numbers of fish larvae for each taxon in 1974 and 1975, listed by station and calendar month in which the tow was taken. Counts are adjusted for percent of sample sorted and standard haul factor. Average values are given for stations occupied more than once during a month. See Table 1 for station and tow data and Table 6 for listing of stations with multiple occupancies during a month. Multiple occupancies occurred when a station was occupied more than once during a calendar month; in some cases, multiple occupancies resulted from separate cruises. The orders are listed in "phylogenetic" sequence modified from Nelson (1984). Subtaxa within each order are listed alphabetically. Page numbers for each taxon are given in the index at the end of the report.
- Table 5 This table is a summary of pooled occurrences of all larval fish taxa taken on CalCOFI surveys from 1972 to 1981. Taxa are listed in the same order as in Table 4.
- Table 6 List of stations with multiple occupancies in one month during the 1975 survey.

ACKNOWLEDGMENTS

Elbert Ahlstrom, John Butler, Susan D'Vincent, Connie Fay, Barbara MacCall, Geoff Moser, Elaine Sandknop, and Betsy Stevens originally identified larvae from CalCOFI cruises of Ronald Whyte coded each larval fish taxon or type and Rita Ford entered them into the computer. Debby Snow efficiently assisted in all aspects of data editing and retrieval. Cindy Meyer and James Ryan provided programming assistance. Dorothy Roll designed the CalCOFI data acquisition system and provided data processing support. Ken Raymond, Roy Allen, and Henry Orr helped with graphics and production of the report. Lorraine Prescott prepared the manuscript for printing. Paul Smith determined statistical outliers, provided assistance during geographical outlier checks and offered helpful suggestions throughout the project. Izadore Barrett, Director of the Southwest Fisheries Center provided support critical to the completion of the project. James Thrailkill planned CalCOFI surveys and supervised cruises, data handling, and plankton sorting from 1949 to 1986 and is largely responsible for the high quality of these operations. Without the vision and direction of Elbert Ahlstrom and Elton Sette and the dedicated efforts of the many people who collected, processed, and analyzed the samples, this data base

would not exist. During the final stages of preparing this report, Reuben Lasker succumbed to cancer. As Chief of the Coastal Fisheries Resources Division, SWFC, his encouragement and support for all of us involved in the sea surveys, sample processing, and data base and report preparation were unwavering. We dedicate this work to his memory.

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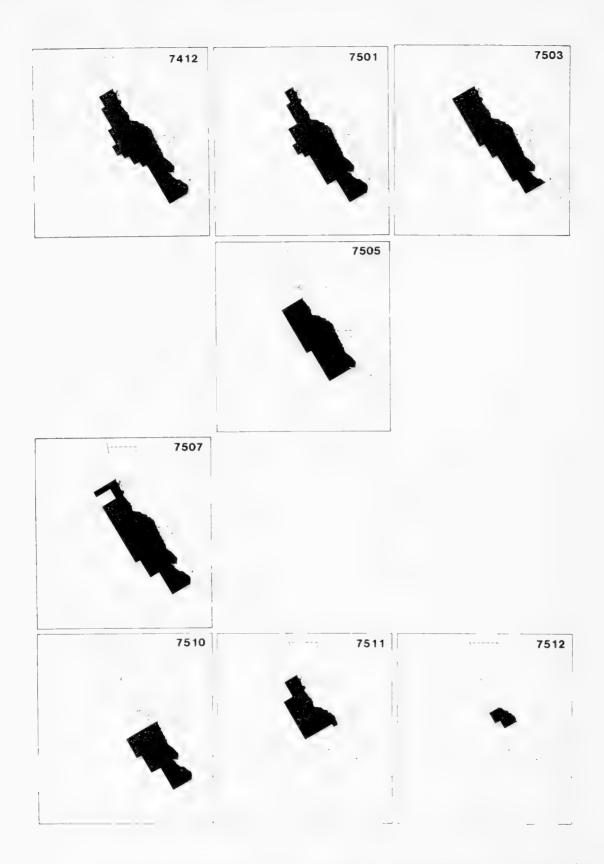


Figure 1. Composite arrangement of diagrammatic charts showing areas sampled on each CalCOFI cruise during 1975.

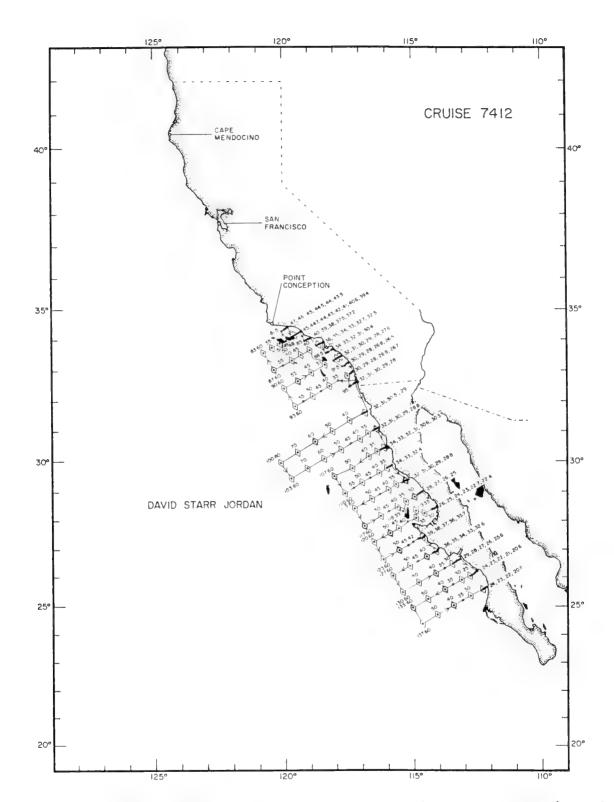


Figure 2. Station pattern for CalCOFI Cruise 7412 showing the track for the David Starr Jordan. Stations with plankton tows are indicated by a dot; circles designate hydrographic stations; diamonds signify STD recordings. Figures 2-10 modified from charts in Univ. of Calif., SIO (1984a, 1984b) to include only those stations listed in Table 1 of this report.

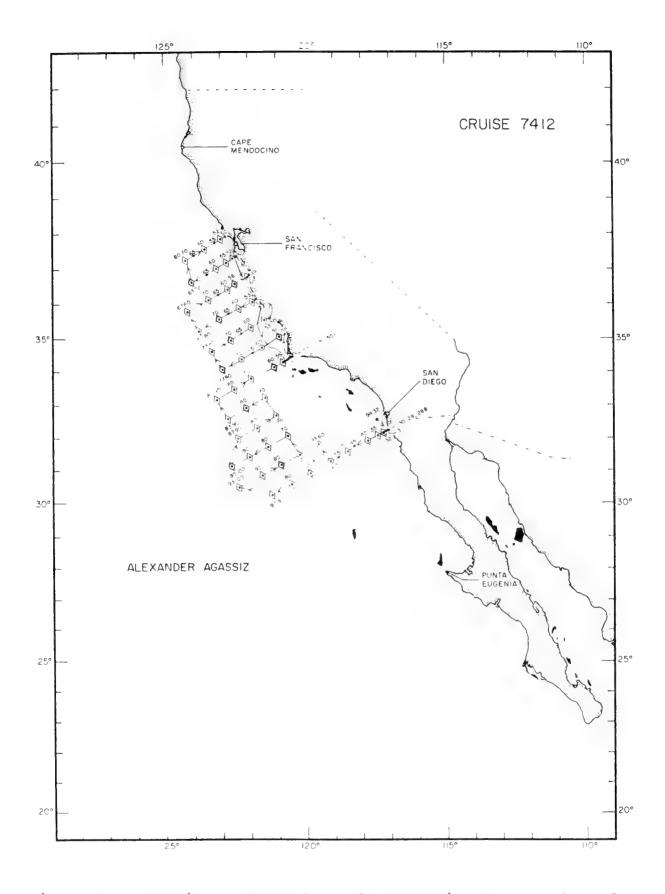


Figure 3. Station pattern for CalCOFI Cruise 7412 - Alexander Agassiz. Symbols as in Figure 2.

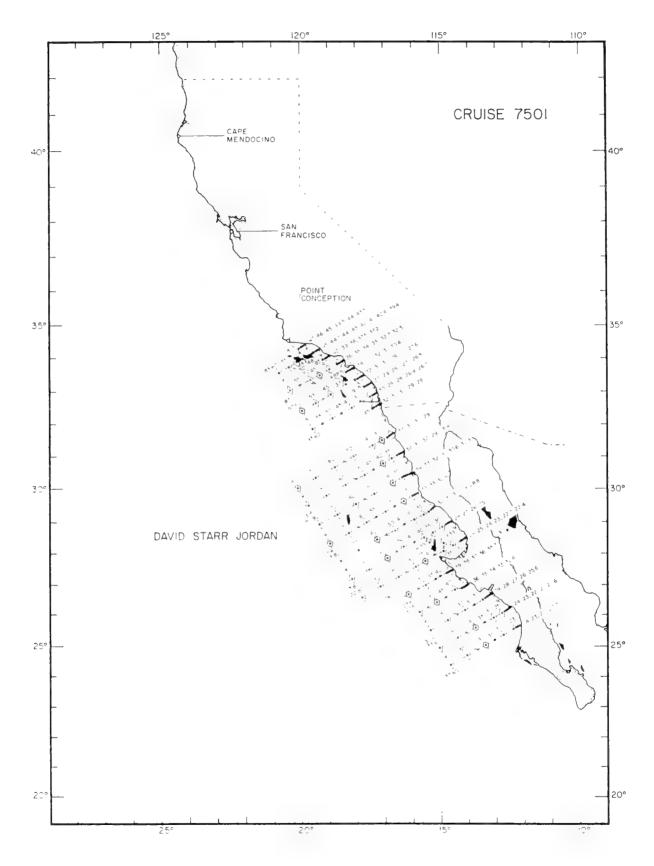


Figure 4. Station pattern for CalCOFI Cruise 7501 - David Starr Jordan. Symbols as in Figure 2.

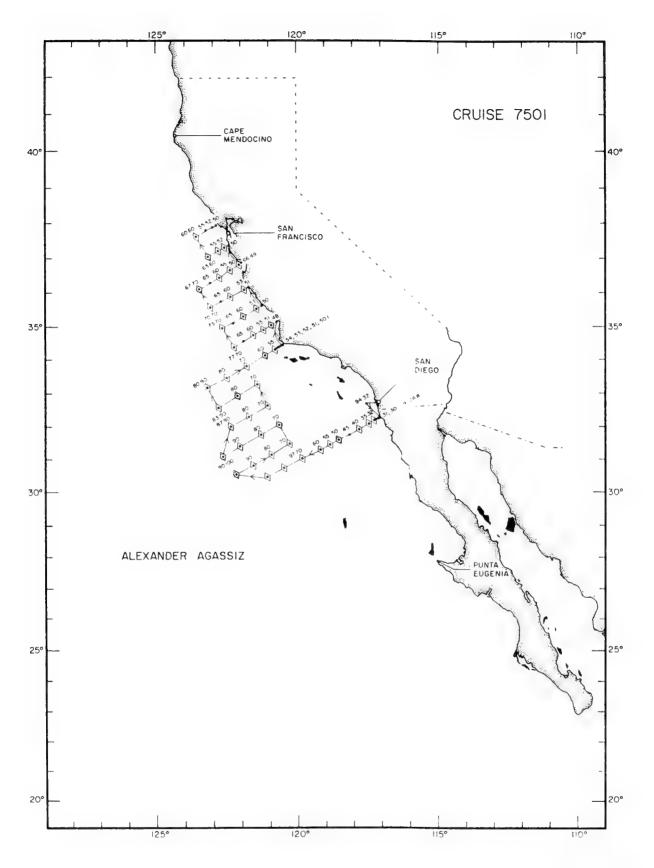


Figure 5. Station pattern for CalCOFI Cruise 7501 - Alexander Agassiz. Symbols as in Figure 2.

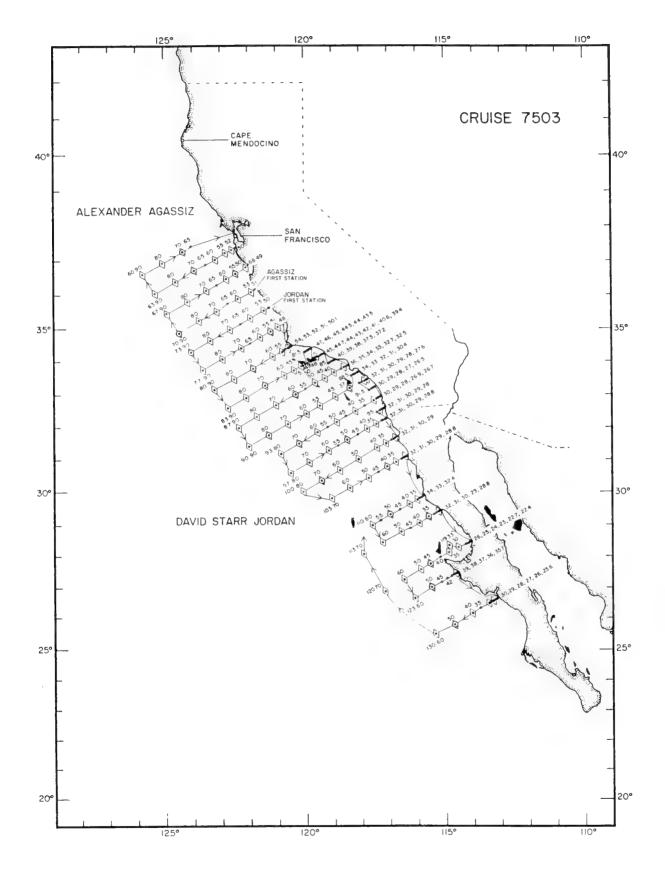


Figure 6. Station pattern for CalCOFI Cruise 7503. Symbols as in Figure 2.

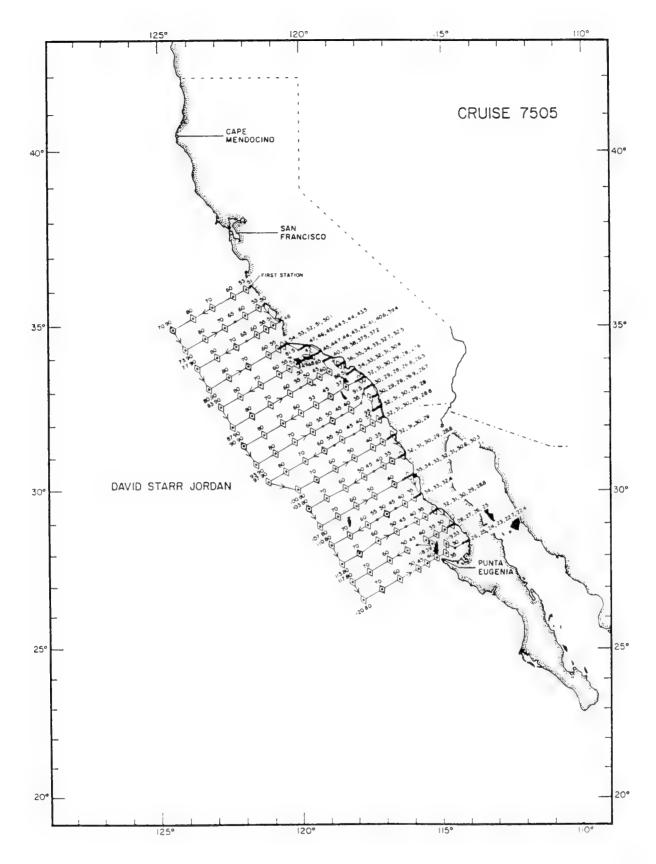


Figure 7. Station pattern for CalCOFI Cruise 7505. Symbols as in Figure 2.

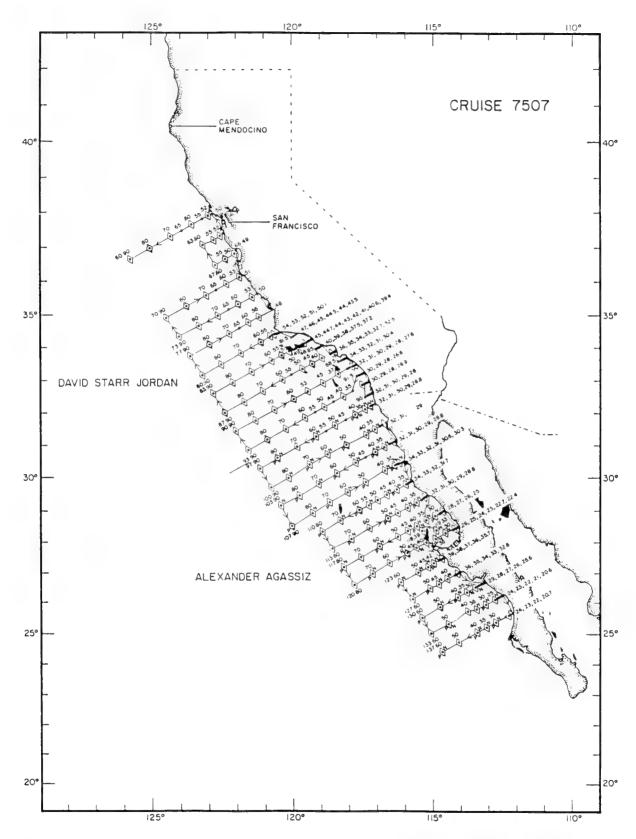


Figure 8. Station pattern for CalCOFI Cruise 7507. Symbols as in Figure 2. "P" and "N" denote phytoplankton and neuston tows, respectively; these data were not included in this report.

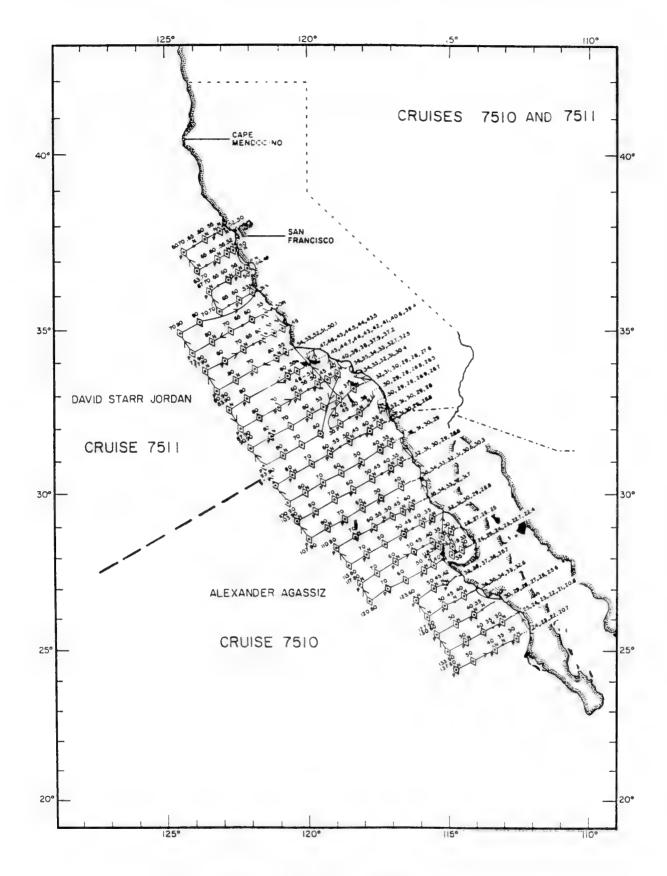


Figure 9. Station pattern for CalCOFI Cruises 7510 and 7511. Symbols as in Figure 8.

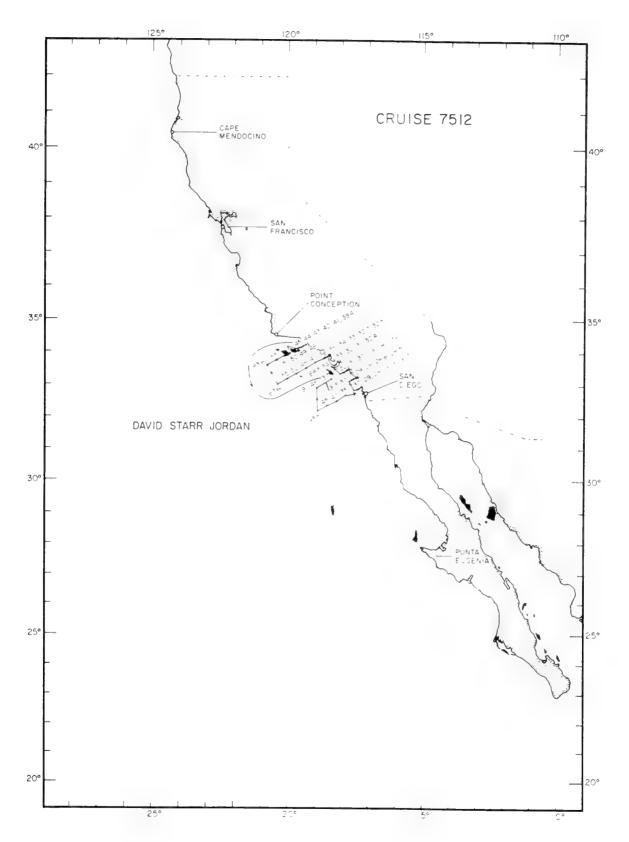


Figure 10. Station pattern for CalCOFI Cruise 7512. Net tow stations indicated by dots; see Univ. of Calif., SIO, 1984b for hydrographic stations.

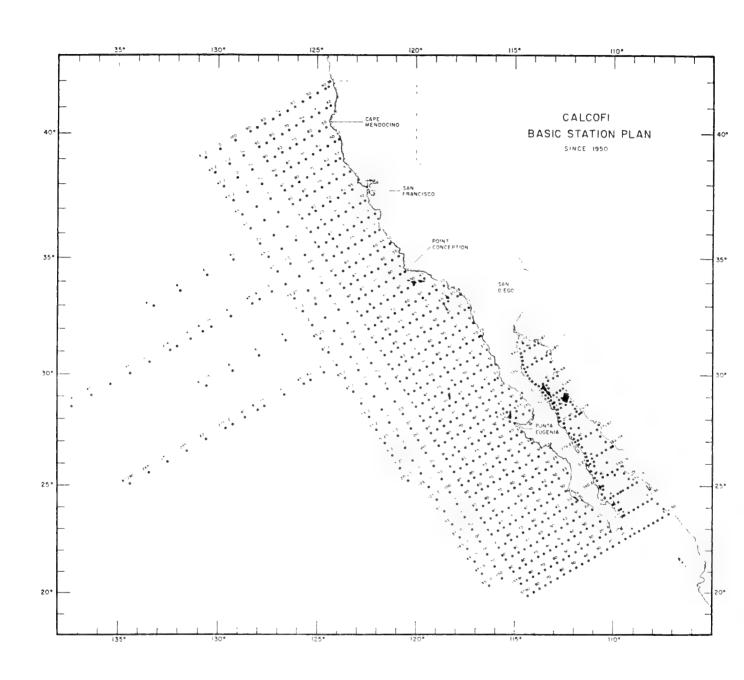


Figure 11. The basic station plan for CalCOFI cruises from 1950 to the present.

TABLE 1. Station and plankton tow data for CalCOFI cruises in 1975. Counts for fish eggs and larvae are not adjusted for standard haul factor or percent of sample sorted.

Total	132 1132 1138 6133 6133 1135 1135 120 120 121 122 123 133 133 133 133 133 133 133
Total Larvae	108 101 111 128 120 133 144 157 173 188 188 188 173 174 175 175 176 177 178 178 178 178 178 178 178 178 178
Percent Sorted	255.0 255.0
Stand- ard Haul Factor	13.200 1.093 1
Vol. Water Strained	1159 1259 1259 1266
Tow Depth	2010 2010 2010 2010 2010 344 2010 2010 2010 2010 2010 2010 2010 20
Time (PST)	2350 22350 22332 17123 17123 17123 17123 17123 17124 17120 1725 1725 1725 1725 1738 1738 1738 1738 1738 1738 1738 1738
Tow Date yr. mo. day	7744 7744
Ship Code	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Long.(W) deg. min.	122 53.2 123 36.6 123 36.6 122 56.2 122 28.0 122 28.0 122 36.2 122 36.2 122 36.2 122 36.2 122 4.0 122 4.0 122 4.0 122 4.0 122 4.0 122 4.0 123 29.0 123 48.0 123 28.7 121 58.7 122 38.7 122 38.7 120 46.3
Lat.(N) deg. min.	337 337 337 337 337 337 337 337 337 337
Station	50 60 60 60 60 60 60 60 60 60 6
Line	60.00 60.00

CalCOFI Cruise 7412

Total Eggs	23 110 100 100 100 100 100 100 100	15
Total Larvae	100 100 100 100 100 100 100 100 100 100	120
Percent Sorted		າດດ
Stand- ard Haul Factor		9.
Vol. Water Strained (cu. m)	70000000000000000000000000000000000000	40
Tow Depth		00
Time (PST)	11922 11922 11923 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300 119300	72
Tow Date yr. mo. day		444
Ship		AX
Long.(W) deg. min.	151.2 131.2 131.2 131.2 131.2 131.2 131.2 131.2 131.2 131.3	21 43. 22 25.
Lat.(N) deg. min.	23 23 23 23 23 23 23 23 23 23 23 23 23 2	2 20.
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04.60	yr. mo. day	74 12 01 74 12 01 74 12 01	4 12	4 12	4 12	4 12	4 12	4 11	4 11	4 11	4 11	4 11	4 11	4 12	4 12	4 12	4 12	4 12	4 12	4 12	4 11	4 11	4 11	4 11	4 11	4 11	4 11	4 11	4 11	4 12	4 12
ر د. د	Code	555	365	ar ar	g:	25	66	an an	31	an	X X	Y X	AX	g f	3 F.	a G	Qf f	35	dr.	96	G.	ar ar	J.D	AX AX	JD	AX	X X	AX	A F	an Or	ag Gr
,	deg. min.	118 07.0 118 09.4	18 17.	17 45.	17 46.	17 53.	17 57. 18 03.	18 22.	18 55. 19 28	19 57.	20 38.	22 01.	22 39.	17 27.	17 29.	17 38.	17 42.	17 18.	17 21.	17 26.	17 51.	18 11. 18 32.	18 52.	19 13.	19 34.	20 14.	20 54. 21 33.	22 14.	17 35.	17 14.	17 18. 17 22.
3	Lat.(N) deg. min.	33 41.4	3 36.	3 29.	3 28.	3 25.	3 23.	3 11.	2 54. 2 30	2 25.	2 05.	1 44.	1 07.	3 14.	3 14.	3 09.	3 07.	2 56.	2 54.	2 23.	2 40.	2 30. 2 20.	2 10.	1 59. 1 49.	1 50.	1 29.	$\frac{1}{0}$	0 30.	2 40.	2 35.	2 33. 2 31.
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	Total Larvae	155 101 101 103 101 101 101 101 101 101 101	
	Percent Sorted	1000.0 10	
	Stand- ard Haul Factor	00112222222222222222222222222222222222	
	Vol. Water Strained (cu. m)	64777777777777777777777777777777777777	
711/	Tow Depth (m)	200 200 200 200 200 200 200 200 200 200	
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	Ship Code	5 <u>xxxxxxxxxxxx</u> 6 <u>6</u> 666666666666666666666	
	Long.(W) deg. min.	7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 - 7 -	
	Lat.(N) deg. min.	22222222222222222222222222222222222222	
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	Line	. <i>&\r\r\r\r\r\r\r\r\r\r\r\r\r\r\r\r\r\r\r</i>	

Total Eggs	438 438 442 472 473 473 473 473 473 473 473 473 473 473	
Total Larvae	13 1361 1255 1257 1264 140 1757 1757 1758 1868 1878 1878 1878 1878 1878 1878 187	
Percent Sorted	25.0 25.0 25.0 25.0 25.0 25.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0	000
Stand- ard Haul Factor	22222222222222222222222222222222222222	5.00
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Tow Depth	2 2 2 2 2 3 4 4 4 4 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6	212 211 23
Time (PST)	2222 2223 2223 2224 2224 2224 2224 2224	55 04 74
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Total Eggs	110 110 110 110 123 133 133 144 110 112 112 113 114 114 114 114 114 114 115 116 118 118 118 118 118 118 118 118 118	
Total Larvae	1 1 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Percent Sorted	1000 1000 1000 1000 1000 1000 1000 100	
Stand- ard Haul Factor	22222222222222222222222222222222222222	
Vol. Water Strained	14 2 3 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
Tow Depth	2003 2003 2003 2003 2003 2003 2003 2003	
Time (PST)	2333 2022 2022 2022 2022 2022 2022 2022	
Tow Date yr. mo. day	75 02 15 15 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18	
Ship	777777777777777777777777777777777777777	
Long.(W) deg. min.	122 53.1 123 37.0 122 38.5 122 38.5 122 38.5 122 28.5 122 28.5 122 28.5 122 28.5 122 28.5 122 28.5 122 28.5 122 28.5 123 10.0 124 44.7 125 28.5 127 28.5 128 30.3 129 44.7 120 48.3 120 48.2 120 48.2 121 19.8 122 30.5 123 19.8 119 44.0 129 48.2 121 19.8 119 47.8	
Lat.(N) deg. min.	337 7 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	
Station	66550000000000000000000000000000000000) }
Line S	660.0 660.0 663.0 663.0 663.0 663.0 663.0 667.0 777.0 777.0 777.0 777.0 777.0 880.0 880.0 880.0 880.0	4

Total Eggs	120 1120 1106 1106 1106 1106 1106 1107 120 1307 1307 1307 1307 1307 1307 1307 130	
Total Larvae	340 110 110 110 110 110 110 110 1	
Percent Sorted	255.0 1000.0 100	
Stand- ard Haul Factor	03322222333322222222222222222222222222	
Vol. Water Strained (cu. m)	663 673 673 673 673 673 673 673 673 673	
Tow Depth	2212 2212 2212 2212 2212 2212 2212 221	
Time (PST)	11149 009588 009588 000550 00710 00510 00510 00510 00732 00732 00733 0073	
Tow Date yr. mo. day	755 01 144 755 01 155	
Ship Code	88888888888888888888888888888888888888	
Long.(W) deg. min.	1119 58.0 1119 19.4 1119 19.4 1119 26.0 1119 34.0 1119 34.0 1119 34.0 1120 26.0 1120 26.0 1120 26.0 1120 26.0 1120 26.0 1120 24.5 1120 003.5 1120 003.5 1121 26.0 1121 26.0 1121 26.0 1121 26.0 1121 26.0 1121 26.0 1121 26.0 1121 27.5 1122 00.0 1133 27.5 1134 27.0 1137 27.5 1137 27.5 1137 27.5	
Lat.(N) deg. min.		
Station	44644444444446666666666666666666666666	1
Line 9		;

CalCOFI Cruise 7501

	Total Eggs		9		3 m L 4.		2 C 4 C C C	52679	96599	163 45 316 57 217 866
	Total Larvae	211 468 341 180 1364	$n \cup m \cup m$	0 1 7 1	4004	727	251 591 334 2761 5119	11 13 14 15	のコアタア	140 56 64 251 478 89 248 825
	Percent Sorted	25. 25. 00.	0000	00. 25. 25.	5000			0000	00. 25. 25. 00.	100.0 25.0 25.0 25.0 25.0 25.0 25.0
	Stand- ard Haul Factor	0.8201	0 8 8 6	0.4.0.	E. 1. 0.	1.2000	ينوشنون	7.89.7.	.00.00	33.560 33.547 33.1947 30.086
	Vol. Water Strained	687 710 653 687 661	960	7	46	9404	726 706 726 677 723	1~88~2	0 9 2 2	137 652 652 631 700 690 653
501	Tow Depth		010	1410	1 2 2 1			311211		36 216 226 218 205 217 219 205
uise 7	Time (PST)	52 72 72 72 32	92 95 95	55 43 23 05	93 93 05	24 10 13 61	1470 133 133 133	12221 104201 305421	75 62 43 70 72	1802 1851 2052 2328 0310 0546 11143
CalCOFI Cr	Tow Date yr. mo. day	55 01 1 55 01 1 56 01 1 56 01 1	5 01 2 01 2 01 2 01 2 01 2 01 2 01 2 01	5 01 1 5 01 1 5 01 1 5 01 1	5 01 1 5 01 1 5 01 1 5 01 1	5 01 1 5 01 1 5 01 1 5 01 1	55 01 1 50 01 1 50 01 1 50 01 1	55 01 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3	5 01 1 1 2 0 1 1 1 2 0 1 1 1 1 1 1 1 1 1	75 01 20 75 01 20 75 01 20 75 01 20 75 01 21 75 01 21 75 01 21
	Ship		AX AX	6666	6666	6666	9999%;	AX AX AX JD		AX A
	Long.(W) deg. min.	18 02. 18 22. 18 55. 19 28.	20 39. 21 18. 22 02. 22 39.	17 27. 17 29. 17 34.	17 42. 17 17. 17 18. 17 22.	17 26. 17 31. 17 51. 18 11.	18 32. 18 52. 19 13. 20 15.	20 55. 21 33. 22 10. 17 34.	17 18. 17 22. 17 26. 17 04.	117 07.0 117 13.0 117 15.2 117 27.4 118 42.6 118 31.5 118 50.5
	Lat.(N) deg. min.	3 21. 3 11. 2 54. 2 39.	2 0 3	33 14.	3 07. 2 57. 2 56. 2 56.	2 52. 2 50. 2 40. 30.	2 20. 2 10. 2 00. 1 50.	1 09. 0 48. 0 32. 2 40.	2 33. 2 31. 2 29. 2 17.	32 16.0 32 13.0 32 12.0 32 05.7 31 55.4 31 46.0 31 27.8
	Station	35.5		9.28	8000	0000	0000	87000		30.0 31.0 32.0 460.0 550.0
	Line S	00000					mmmmm	ოოო 4 ს 1		997.0

CalCOFI Cruise 7501

	Total Eggs	3812	4 T T	25	1160	0	-	42	703	~	77	84	01	4.7 A.2	5.1	92	44	9	267	m,	215	700	ے د	149	9			00							40		7		0
	Total Larvae	662 898	7.7	3	Ō	4	\supset \subset	20	788	2	86	69	0 6	, c O L	66	'n	13	2017	6	_	495	200	٧.	430	-	26	23	5.1	96	502	7	61	9	186	ت رد	- [184	7	49
	Percent Sorted	100.0	00	25.	5.	5	Ų	, ע	5.	5.	0	00.	ο L	י ני		5.	5.	5.	5	د	25.				00.	ហ	ů,	o G	ک د	00	0.	00.	00.	٠ د د	٠	•	o G	 	5
Stand- ard	Haul Factor	3.46	ۍ د د		6.	0,	ې د	- 0	: :	8	6.	0.	7.0	, ,	٠, ٧	. 6	7	٦.	6.	ထ္		٦.	د د			0.	٥.	•		6.	6.	9.	ω.	φ.	. 0	0.0	9 1	٠.	000
Vol. Water	Strained (cu. m)	616	2 -	15	0	8	-10	ه د	ء ھ	2	-	œι		ח ת	י ר	٦.	-	-	$\overline{}$	ヴ		٠,	٦ ،	v œ	5	6	0	ם ע	٦ ٣	2	-	8	च	7		2	י ע	0	4
TOW	Depth	213	0 0	10	$\overline{}$	— •	0 -	→ ○	> -	0	0	_	4.	61	7 0	\neg		\neg	0	_	207	٦,	٦.	20	3 6	\neg		210	4 0	\neg		0	-	33	7	0	205	-	-
	Time (PST)	1447	05	90	04	24	35	200	0 7	65	22	42	7.7	# T C	50	75	09	25	25	00	00	7 7 0	47	700	74	85	95	200	70	80	30	80	25	0.7	94	0 1	7 (77	0.5
	Tow Date yr. mo. day	75 01 21 75 01 21	5 01 2 5 01 2	5 01 1	5 01 1	5 01 1	5 01 1	2 TU ت	5 01 2	5 01 2	5 01 2	5 01 2	5 01 2	2 01 2	2 10 2	5 01 2	5 01 2	5 01 2	5 01 2	5 01 2	$\frac{5}{2}$ 01 2	2 IO 5	2 10 5	5 01 2	5 01 2	5 01 2	$\frac{5}{2}$ 01 2	5 01 2	5 01 2	5 01 2	5 01 2	5 01 2	5 01 2	5 01 2	5 01 2	7 10 0	2 10 5	5 01 2	5 01 2
	Ship	AX	AX	d D	JD	JD	ar er	ם מי	gr.	and C	JD	JD	ar G	ם ה	ם ב	g:	a C	JD	JD	JD	JD	ar er	a r	a C	an an	JD	JD	d E	2 -	J. O.	JD	JD	JD	JD	JD GE	טט קיי	J .	3 -	an an
	Long.(W) deg. min.	119 10.5	20 28.	16 43.	16 46.	16 50.	16 54.	1/0/.	18 07	18 47.	19 28.	20 07.	16 20.	16 21.	16 29.	16 32	16 45.	17 04.	17 24.	17 42.	18 24.	19 04.	19 42.	16 04.	16 07.	16 11.	16 15.	16 19.	16 42	17 22.	18 01.	18 41.	19 20.	15 49.	15 52.	10 00.	16 00.	16 39	16 59.
	Lat.(N) deg. min.	31 18.4 31 01.8	0 43.	1 42.	1 40.	1 38.	1 54.	1 30.	1 20.	0.40.	0 20.	0 01.	1 07.	1 07.	1 Ub.	1 03.	56.	0.45.	0 36.	0 24.	0 05.	946.	0 29.	0 29.	0 27.	0 25.	0 23.	0 22.	10 10	9 50.	9 31.	9 11.	8 51.	9 51.	9 50.	40.	9 46.	200	9 16.
	Station	0.09	0.	. 6	0	7	2.	5			0	0.	&	9	n		4 6		5	0	0	0.0	0			2	3	4 u			. 0	0	0.	2	٠ •				0
	Line S	97.0	-	000	00.	00.	00	00.	000		000	00.	03.	03.	03.	200	200	033	03.	03.	03.	03.	03.	07.	07.	07.	07.	07.		07.0	07.	07.	07.	10.	0.	.01	9		10.

CalCOFI Cruise 7501

Total Eggs	21 666 666 667 668 668 669 669 669 669 669 777 777 777 777 773 777 777 777 777 77
Total Larvae	364 123 123 123 123 123 123 123 123 123 123
Percent Sorted	25.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0
Stand- ard Haul Factor	22.22222222222222222222222222222222222
Vol. Water Strained (cu. m)	7003 7003 7003 7003 7003 7003 7003 7003
Tow Depth (m)	2200 2210 22113 22110 22110 22113 22113 22113 22113 22114 22113 22114 22113 22114 22
Time (PST)	11739 11739 11739 11739 1173338 1173338 1173338 1173339 117335 117335 117335 117335 11735
Тоw Date yr. mo. day	75 01 25 01 25 01 25 01 25 01 25 01 25 01 25 01 26 01 26 01 26 01 26 01 26 01 27 01 27 01 29 01
Ship	989888888888888888888888888888888888888
Long.(W) deg. min.	1117 19.0 1118 18.0 1115 18.0 1115 18.0 1115 18.0 1115 25.8 1115 25.8 1115 25.0 1117 16.0 1114 45.0 1116 20.0 1118 13.5 1118 13.0 1119 23.9 1114 18.0 1114 18.0 1114 18.0 1115 14.0 1117 10.0 1117 10.0 1117 10.0
Lat.(N) deg. min.	29 06 28 36 29 06 29 25 29 25 29 25 20 25
Station	55 50 50 50 50 50 50 50 50 50
Line	11110000000000000000000000000000000000

CalCOF1 Cruise 7501

Total Eggs	26 4 4 4 7 7 6 4 9 4 1 1 5 1 1 5 1 1 5 1 1 5 1 1 5 1 1 1 1	32
Total Larvae	114 1288 133 144 1018 1018 1018 1019 1019 1019 1019 1019	
Percent Sorted	1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0	00.
Stand- ard Haul Factor	22322222222222222222222222222222222222	9
Vol. Water Strained (cu. m)	22222222222222222222222222222222222222	20
Tow Depth	22222 2222 2222 2222 2222 2222 2222 2222	
Time (PST)	00000000000000000000000000000000000000	41
Tow Date yr. mo. day	755 02 03 03 03 04 05 05 05 05 05 05 05 05 05 05 05 05 05	5 02 0
Ship	888888888888888888888888888888888888888	JD DD
Long.(W) deg. min.	W44401W000011U404U1UVU404UWWW4440V4V0U11U40VC	14 39.
Lat.(N) deg. min.	77777777777777777777777777777777777777	4 40.
Station	BEREA 4 00 00 00 00 00 00 00 00 00 00 00 00 0	0
Line	mmmmmmmr/r/r/r/r/0000000000000000000000	7:

CalCOFI Cruise 7503

	Total Eggs	2222 200 112 112 123 133 135 135 135 135 135 135 13
	Total Larvae	LW 1
	Percent Sorted	255.0 100.0
	Stand- ard Haul Factor	22.22.22.22.22.22.22.22.22.22.22.22.22.
	Vol. Water Strained	7778 7778 7778 7778 7778 7783 7783 7783
100	Tow Depth	212 212 228 228 229 220 220 220 220 220 220 220 220 220
De l'n	Time (PST)	00000000000000000000000000000000000000
Calcori	Tow Date yr. mo. day	75 03 02 75 03 02 75 03 02 75 03 02 75 03 02 75 03 02 75 02 28 75 02 28 75 02 28 75 02 28 75 02 28 75 02 28 75 02 28 75 02 28 75 02 28 75 02 26 75 03 01 75 03 01 75 03 03 75 03 03 75 03 02 75 03 03 75 03 02 75 03 03 75 03 02 75 03 02 75 03 03 75 03 02 75 03 03 75 03 02 75
	Ship Code	A A A A A A A A A A A A A A A A A A A
	Long.(W) deg. min.	124 201.4 125 420.0 125 420.0 125 421.8 122 27.8 123 31.0 123 31.0 123 55.0 122 24.0 122 24.0 122 24.0 122 24.0 123 29.5 121 28.5 121 28.5 121 28.5 122 19.0 122 22.0 123 26.0 123 26.0 123 26.0 123 26.0 123 27.0 123 28.5 121 28.5 121 28.5 121 28.5 122 120 56.5 121 28.5 122 24.0 122 25.0 123 25.0 123 25.0
	Lat.(N) deg. min.	337 27.0 336 337 27.0 337 27.0 337 27.0 337 27.0 338 337.0 338 237.0 339 237.0 339 237.0 330 237.0 330 237.0 331 34 24 2.0 331 34 34 34 34 34 34 34 34 34 34 34 34 34
	Station	65.0 80.0
	Line	0.000000000000000000000000000000000000

CalCOFI Cruise 7503

	Total Eggs	100 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	Total Larvae	233 232 233 232 234 232 232 232 232 232	
	Percent Sorted	25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0	
	Stand- ard Haul Factor	22.22.22.22.22.22.22.22.22.22.22.22.22.	
	Vol. Water Strained (cu. m)	728 700 703 703 703 705 705 715 715 715 717 718 718 718 718 719 719 719 719 719 719 719 719 719 719	
7503	Tow Depth	2500 2500 2500 2500 2500 2000 2000 2000	
ise	Time (PST)	1706 1816 1917 1917 1917 1917 1917 1917 1917 19	
CalCOF1 Cru	Tow Date yr. mo. day	75 03 03 75 75 03 03 75 75 03 03 03 75 03 03 03 75 03 03 03 75 03 04 75 03 04 75 03 04 75 03 04 75 03 04 75 03 06 75 03 06 75 03 07 75 03 07 75 03 07 75 03 07 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 05 75 03 06 75 03 06 75 03 06 75 03 06 75 03 08 75 03	
	Ship	566666666666666666666666666666666666666	
	Long.(W) deg. min.	84440000444000004440000004440000004440000	
	Lat.(N) deg. min.	22 24 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5	
	tation	0.000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	Line S		

	Total Eggs	126501 126501 3826 3826 3826 3826 3826 3826 1041 1044 11119 11119 11119 11119 11119 11119 11119 11119 11119 11119 11119 11119	m
	Total Larvae	1008 1008 1008 1008 1008 1008 1008 1008	-
	Percent Sorted	255.0 255.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0	5.
	Stand- ard Haul Factor	288292222388888888888888888888888888888	₹.
	Vol. Water Strained	7.000 7.0000 7.0	7
503	Tow Depth	22222222222222222222222222222222222222	214
Cruise	Time (PST)	001334 001333 001333 001330 001330 001300 001300 001300 001300 001300 001300 001300 001300 001300 001300 001300 001300 001300	34
Calcori Cr	Tow Date r. mo. day	775 03 08 775 03 08 775 03 08 775 03 09 775 03 09 775 03 09 775 03 11	5 03 1
	Ship Code y	888888888888888888888888888888888888888	GF GF
	Long.(W) deg. min.	120 000.0 120 020.0 121 43.0 121 43.0 122 24.0 118 03.5 118 13.5 117 445.5 117 34.0 117 18.3 117 18.3 117 18.3 117 18.3 117 18.3 117 18.3	17 22.
	Lat.(N) deg. min.	33 10.0 33 11.0 33 11.0 33 11.0 33 11.0 33 11.0 33 11.0 33 11.0 33 11.0 33 11.0 33 10.0 33 10.0	2 31.
	Station	255.0 260.0 27	-
	Line S	888887.00 877.00 877.00 877.00 877.00 877.00 877.00 877.00 877.00 877.00 877.00 877.00	5.

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Total Eggs	1224 11253 11253 11253 11253 11253 11253 11253 11353 12253 1235 1233 1233	29
Total Larvae	1354 1354 1354 1356 1365 1376 1376 1376 1376 1376 1376 1376 1376	111
Percent Sorted	255.0 255.0	020
Stand- ard Haul Factor	EQUARENCE E E E E E E E E E E E E E E E E E E	3.
Vol. Water Strained (cu. m)	603 603 603 603 603 603 603 603 603 603	5 5 9
Tow Depth	200 200 200 200 201 201 201 201 201 201	
Time (PST)	22214 18444 18444 18444 18521 18015 10016 00412 10016	1046 1358 1605
Tow Date r. mo. day	775 03 119 120 120 120 120 120 120 120 120 120 120	5 03 2 5 03 2 5 03 2
Ship Code y		05 05 05
Long.(W) deg. min.	000101100001740000000000000000000000000	17 19. 17 39. 15 12.
Lat.(N) deg. min.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	9 06. 9 56. 9 25.
Station	0.000000000000000000000000000000000000	80.0
Line S	000000000000000000000000000000000000000	00.0

CalCOFI Cruise 7503

Total Eggs	24 4 1189 13888 13888 13888 13888 13888 13888 1388 1388 138 13	
Total Larvae	10 16 49 16 499 1323 1323 1 127 1 189 1 10 1 10 1 10 1 10 1 10 1 10 1 10 1 1	
Percent Sorted	25.0 25.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 100.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0	
Stand- ard Haul Factor	22222222222222222222222222222222222222	
Vol. Water Strained	128	
Tow Depth	22000 22000 22000 22000 22000 22000 22000 22000 22000 22000 22000 2300 2000	1
Time (PST)	11458 114458 111145 11145	i
Tow Date yr. mo. day	755 03 25 756 03 25 757 03 25 758 03 25 759 03 25	
Ship Code	888888888888888888888888888888888888888)
Long.(W) deg. min.	1115 13.5 1115 13.5 1115 13.5 1115 13.5 1116 34.0 1116 36.5 1117 555.0 1117 555.0 1118 34.0 1118 54.0 1118 54.0 1118 54.0 1118 54.0 1119 55.0 1119 59.0 1113 13.1 113 13.1 113 26.0 114 45.0	
Lat.(N) deg. min.	29 22 24 25 26 26 26 26 26 26 26 26 26 26 26 26 26	,
Station	0.000000000000000000000000000000000000	•
Line	111330.00 11330.00 11330.00 11330.00	9

CalCOFI Cruise 7505

Total Eggs	w W w	90	19	11	n u	52	108	7 °C	2 2	13	9 -	16	47 (א ני	n m	0 -	10	22	7 8 2	113	94	0	5		123	9	21	30	α	304
Total Larvae	13 8 7	Q 4	35	21	9	96	64	22	22	2	9 .	28	200	7 6	nm	9 (13	9	74	22	7	2 7	· m	0	- 4		13	₹1	- 0	9
Percent Sorted	100.0 25.0 25.0	70.70	00	000	ດທ່	o r		25.	w ro	, ro	س	00.	Č.	0.10			0.0		25.	00.	00.	- :	25.						200	
Stand- ard Haul Factor	2.80 2.89 3.13	- Ψ	0117			4 -		٠٠.	ئ د		~	• 0	Si	ů o	joj	ص د	70	2	۲۰α	9.	٥	م ٔ م	ناز	٥.	ص د	ຸເດ	o.	קי	ص ۾) 44
Vol. Water Strained (cu. m)	348 732 679	01 4		1 1 - 1	7 9	41 O	ع صعا ا	ກ ວາ	681	_	co c	\neg		ע ע	\sim	NI	> ⊚	· w	₹	ا ا		⊿ ∩ —	1 10	_	9 -	4	2	~	309	0
Tow Depth	98 212 213	0	-) ~~ ~	182	— —	1 C	4 –	201	\sim		_	~ (J) ~	4	$\overline{}$	-	_	207	\sim	50	9-	208	0	13 28	62	$\overline{}$	213	コに	16
Time (PST)	1754 2020 0038	S		' ' ' ' ' '		\sim	າຕາເ	5	ω	3 10	T /	v m	100	\neg	3	4 C	n		-	* ~~	011	00	110	10	~~	0.1	_		_	
Tow Date yr. mo. day	75 05 09 75 05 09 75 05 10	5 05 1 5 05 1	5 05 1	5 05 1	5 05 1	5 05 1 5 05 1	5005	5 05 1 5 05 1	5 05 1	5 05 1	5 05 1	5 05 1 5 05 1	5 05 1	5 U5 L	5 05 1	5 05 1	5 05 1 5 05 1	5 05 1	5 05 1 5 05 1	5 05 1	5 05 1	5 05 1	5 05 1	5 05 1	5 05 1	5 05 1	5 05 1	5 05 1	7 00 7	5 05 1
Ship Code	999	d G	85	35	d G	9 5	35	a a	95	ag	GF.	g G G	G,	35	ar ar	JD GF	JD JD	JD	95	an On	JD	gr.	JD JD	ar	91	JD	JD	d E	3 5	30
Long.(W) deg. min.	121 43.9 121 54.0 122 23.0	3 48	24 30	21 28	22 19	22 40	24 04	20 43 20 56	21 13	21 55	22 16	23 39	20 30	20 33	20 40	20 43	21 09	21 51	22 32	19 47	19 49	19 52	19 58	20 02	19 19	19 26	19 30	19 34	19 41	19 42
Lat.(N) deg. min.	36 11.3 36 06.5 35 53.0	5 33.	4 53.	5 31.	5 17. 5 08.	4 58°.	4 18.	5 08. 5 01.	4 54.	4 34.	4 23.	4 43.	4 27.	4 26.	4 23.	4 20.	4 19.	3 48.	3 29.	4 24.	4 23.	21.	4 19.	1 17.	4 14.	4 11.	4 09.	080	000	4 03.
tation	53.0	0.0	00	 . m .	5.	0 0	. 0	 ~ ¤	50		0	0	0.	-i c	 M	4.7	o	0	0.0		4	6 7.		7	م د		2	M =	· ·	5
Line S	70.0	0.0	0		. m	ب س د				7:	7.	: -	0	0	0.	0		0	0 0				•	-	ب م	3	~	· ·	 	

	Total Eggs	126 126 127 127 137 147 153 147 153 153 154 154 154 154 154 154 154 154 154 154	
	Total Larvae	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
	Percent Sorted	25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0	
	Stand- ard Haul Factor	22222222222222222222222222222222222222	
	Vol. Water Strained	336 336 707 707 707 708 708 708 708 708	
7505	Tow Depth	100 100 1116 1116 1116 1110 1110 1110 1	
nıse	Time (PST)	00842 11028 11138 11557 11557 11557 000448 00144 11722 11733 11733 118015 11758 001000 00100 001	
CalCOFI Cru	Tow Date yr. mo. day	75 05 16 75 05 17 75 05 17 75 05 19 75 05 20 75 05	
	Ship Code	666666666666666666666666666666666666666	
	Long.(W) deg. min.	1119 55.0 120 03.5 120 03.5 120 24.3 120 24.3 120 24.3 122 26.0 112 26.0 113 58.5 118 28.6 118 28.0 118 29.0 118 29.0 118 29.0 118 29.0 118 29.0 118 29.0 118 29.0 118 29.0 119 19.0 111 45.0 117 45.5 118 56.0 119 53.5 111 45.0 111 45.5 111 53.5 111 53.5 111 53.5 111 53.5 111 53.5	
	Lat.(N) deg. min.	333 558.0 333 558.0 333 558.0 333 559.0 333 359.0 333 359.0 333 359.0 333 350.0 333 350.0 335 550.0 337 550.0 337 550.0 338 550.0 338 550.0 338 550.0 338 550.0 338 550.0 338 550.0 350.0 360.0 370.0	
	Station	8488.0 200.0 2	
	Line	8833.0 8833.0 8833.0 8833.0 8833.0 8833.0 8877.0 8877.0 8877.0 8877.0 8877.0 8877.0 8877.0 8877.0 8877.0 8877.0	

CalCOFI Cruise 7505

	Total Eggs	72 5800 3066	42	$m \propto$	7	-	296 3	7	⊃ ~	12	20	∞	719	12	28	10572	8 40 40	200	15	<u>о</u> ч	26	3 6 6	69	7	2 5	166	82 282	
	Total Larvae	598 633	70			124		977				<u>س</u> 9			4		om			₹ 4	m					29		
	Percent Sorted	100.0	25.	25.					ຸຸ	00	0	00. 25.	ıçı	ດີເດ	25.		000	25.	00	ro ro	5.	25. 00.	00	25.	s.		5.	
	Stand- ard Haul Factor	3.03	د. و.	9.9	90	.20	.1	.1.	.2	9.	. 2	.7	.2	.5	4.	10	.0	7	.0	ي ه	.0.	9.0	£.0	9	0.	.1	0.0	
	Vol. Water Strained	710 65	625 672	ov a	9	o so	4 8	746	∞	6	9	9	ਚ (٥ و	2 -	19	~ 8	∞	75	0	20	S	3	0	1	75	700 712	
7505	Tow Depth	215 14 48		0	1500	00	0		00	0	\sim	0 -	m		-10		40	,	-0	0	-	90		15	0	9 –		
uise	Time (PST)	1321 0944	73	43	100	93	11	22 93	7232	10	02	85	53	02	35	00	04	25	80	02	12	53	43	44	34	20 05	31	
CalCOFI Cru	Tow Date yr. mo. day	75 05 22 75 05 24 75 05 24	5 05 2 2 05 2 2	5 05 2	5 05 2	5 05 2	5 05 2 5 05 2	5 05 2 5 05 2	5 05 2 $5 05 2$	5 05 2	5 05 2 5 05 2	5 05 2 5 05 2	5 05 2	5052 5052	5 05 2	5 05 2	5 05 2 5 05 2	5 05 2	5052	5 05 2	5 05 2	5 05 2	5 05 2	5 05 2	5 05 2	5 05 2 5 05 2	5 05 2 5 05 2	
	Ship	95	355	121	36	25	200	25	OL.	ar ar	3 2 0	O. C.	JD	95	JD GE	30	55	an	JD JD	dt dt	an an	di.	an a	an Or	JD	9 9 9	95	
	Long.(W) deg. min.	122 01.0	17 34.	17 42.	17 18.	17 24.	17 31. 17 51.	18 11. 18 32.	18 53.	19 34.	20 14. 20 54.	21 34.	17 14.	17 27.	17 18.	17 04.	17 07.	17 15.	17 27. 17 48.	18 08.	18 49.	19 10.	20 31.	16 43.	16 46.	16 50. 16 54.	17 07. 17 27.	
	Lat.(N) deg. min.	31 24.0 33 14.7	3 11.	3 07.	2 56.	2 54. 2 52.	2 50. 2 40.	2 30. 2 20.	2 10.	50.	$\frac{1}{1} \frac{30}{10}$.	0 50.	2 35.	2 29.	2 33.	2 17. 2 17.	2 16.	2 12.	2 05. 1 56.	1 46.	1 36. 1 25.	1 15.	0 35.	1 42.	1 40.	1 38. 1 36.	1 30.	
	Station	90.0				800	50.	о М	0 4		00	0 0		0 -		. o	0.	5.	. c	2		0		5 6	0	7:	0.2	
	Line	90.0			200	m m	. n	m m	6,0		 m m	m u		5.0		7:	1.		7:			1.	:::		0	00	00	

CalCOFI Cruise 7505

Total Eggs	359 1359 1359 1356 1173 137 137 138 138 138 138 138 138 138 138 138 138	~~
Total Larvae	200 200 300 300 300 300 300 300 300 300	75
Percent Sorted	25.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0	25.
Stand- ard Haul Factor	23.22.22.22.22.22.22.22.22.22.22.22.22.2	ນໍວ
Vol. Water Strained (cu. m)	622 695 695 695 695 695 697 698 698 698 698 698 698 698 698	7
Tow Depth	2000 2100 2100 2100 2102 2012 2012 2012	95 208
Time (PST)	11553 11553 11654 11654 11654 11656 11664 11664 11665	8 8 8
Tow Date yr. mo. day	755 05 28 757 05 28 758 05 28 758 05 29 759 05 29 759 05 29 759 05 29 750 05 29 750 05 29 750 05 31 750 05 31 750 06 01 750 06 01	5 5 06
Ship Code	555555555555555555555555555555555555555	25
Long.(W) deg. min.	118 47.5 119 27.5 120 07.0 116 20.0 116 20.0 116 24.5 1116 24.5 1116 24.5 1117 24.5 1117 24.5 1118 25.0 1119 43.7 1119 43.7 1119 43.7 1119 43.7 1119 45.0 1116 15.0 1116 10.3 1116 20.0 1116 20.0 1117 45.0 1118 41.0 1119 20.0 1119 20.0 1119 20.0 1119 20.0 1111 39.0 1111 39.0 1111 19.0	15 25. 15 38.
Lat.(N) deg. min.		9 17. 9 11.
Station	0.000000000000000000000000000000000000	5.
Line		

Total Eggs	2 339 339 339 339 332 332 332 333 333 333	2
Total Larvae	25 11 37 37 118 1188 1190 277 277 277 277 277 277 277 277 277 27	138
Percent Sorted	25.0 25.0 25.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0	
Stand- ard Haul Factor	23.114 23.114 22.22233.059114 22.2233.059114 22.2233.0933 22.2233.0933 22.2233.0933 22.2233.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333.0933 23.2333 23	Τ.
Vol. Water Strained (cu. m)	655 665 665 665 668 668 668 668 668 668	∞
Tow Depth	2006 2006 2010 2010 2010 2010 2008 2011 2008 2011 2008 2004 2004 2004 2004	_
Time (PST)	0010 0010 00103 00103 1026 1026 1026 1026 1035 1036 1036 1036 1036 1036 1036 1036 1036	0316
Tow Date yr. mo. day	75 06 03 3 75 06 03 75 06 03 75 06 03 75 06 03 75 06 03 75 06 03 75 06 03 75 06 04 75 06 04 75 06 06 04 75 06 06 06 06 06 06 06 06 06 06 06 06 06	5 06 0
Ship	6888888888888888888888888888888	25
Long.(W) deg. min.	1115 56 1116 36.0 1117 17.0 1118 33.0 1118 33.0 1118 33.0 1118 33.0 1118 32.5 1118 32.5 1118 10.7 1118 10.7 1118 10.7 1118 13.0 1118 13.0 1118 13.0	17 48.
Lat.(N) deg. min.	29 22 88 22 98 22 98 22 98 22 98 28 28 28 28 28 28 28 28 28 28 28 28 28	6 32.
Station	4450.0000000000000000000000000000000000	0
Line 9		0.0

CalCOFI Cruise 7507

	Total Eggs	111 120 130 144 111 122 133 132 133 133 134 135 136 137 138 137 138 138 138 138 138 138 138 138 138 138
	Total Larvae	117 117 110 110 110 110 110 110 110 110
	Percent Sorted	255.0 255.0
Stand-	ard Haul Factor	22322222222222222222222222222222222222
Vol.	Water Strained (cu. m)	1157 728 728 728 728 728 728 738 738 738 738 738 738 738 738 738 73
2	Tow Depth	2210 22112 22112 22112 2212 2212 2213 2213
	Time (PST)	117033 100224 100224 1002228 1002228 1002224 100224 10
carcori	Tow Date yr. mo. day	75 07 17 75 07 17 75 07 17 75 07 17 75 07 17 75 07 18 75 07 18 75 07 18 75 07 18 75 07 16 75 07 16 75 07 16 75 07 16 75 07 16 75 07 11 75 07 11 75 07 09 75 07 09 76 07 09 77 07 09 77 07 09 78 07 09 78 07 09 78 07 09 79 07 09 79 07 09
	Ship	666666666666666666666666666666666666666
	Long.(W) deg. min.	122 53.1 123 11.7 123 37.0 123 37.0 123 37.0 122 50.0 122 50.0 122 50.0 122 20.0 122 20.0 122 47.5 122 20.0 123 47.7 122 20.0 123 47.7 121 54.0 122 40.0 123 40.0 123 40.0 123 40.0 123 40.0 121 33.5 121 33.5 120 44.1 121 60.0 122 35.8 120 48.0 121 60.0 122 35.8
	Lat.(N) deg. min.	337 257.5 337 257.5 337 257.5 337 257.0 337 257.0 338 257.0 357 257.0 367 257.0 37
	Station	8787878788
	Line	660.00 660.00 660.00 660.00 660.00 660.00 660.00 660.00 677.00 777.00 777.00 777.00 777.00 777.00 777.00 880.00 880.00

Led 2	11884 2 21180144698899 411428841112482 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	556 221 37 37	
Tota	2 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	67	
Total Larvae	789994	52 20 65 827 622	
Percent Sorted	1000 1000 1000 1000 1000 1000 1000 100	00000	
Stand- ard Haul Factor	23322222222222222222222222222222222222	611.2	
Vol. Water Strained	74533 7553 7663 775 775 775 775 775 775 775 77	726 672 693 91	
Tow Depth	2002 2003 2003 2003 2003 2003 2003 2003	211 213 215 14 23	
Time (PST)	- 0WOHW40O8C04KO66KB4HOKH0HKKCCKM408OOM60<	91 91 81 64	
Tow Date Yr. mo. day	55 07 0 03 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5 07 0 5 07 0 5 07 0 5 06 3	
Ship		55555	
Long.(W) deg. min.	23 13 13 13 13 13 13 13 13 13 13 13 13 13	21 02. 21 43. 22 24. 18 07.	
Lat.(N) deg. min.	64444444444444444444444444444444444444	3 39. 1 59. 3 41.	
Station	04444444444444446000000000000000000000	HO000	
Line		88.77	

Total Eggs	159 8 199 804 109 109 109 109 109 109 109 109 109 109	
Total Larvae	20 111 1118 1118 1119 1119 1119 1119 1119	
Percent Sorted	255.00 255.00	
Stand- ard Haul Factor	22222242222222222222222222222222222222	
Vol. Water Strained	130 6559 7729 6559 7729 7729 7729 7729 7720 7720 7720 772	
Tow Depth	22 22 22 22 22 22 22 22 22 22 22 22 22	1
Time (PST)	1180 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 219300 21930 219300 219	1
Tow Date yr. mo. day	7.55))
Ship Code	55555555555555555555555555555555555555	
Long.(W) deg. min.	1118 13.5 1118 13.5 1117 445.4 1117 53.5 1117 53.5 1117 53.5 1118 22.5 1119 22.6 1119 22.6 1119 34.0 1117 22.5 1119 33.7 1117 34.0 1117 34.0 1117 34.0 1117 35.0 1117 35.0 1117 35.0 1117 25.2 1117 25.3 1117 25.3 1117 25.3 1117 25.3 1117 25.3	
Lat.(N) deg. min.		
Station	22222222222222222222222222222222222222	1
Line	88888888888888888888888888888888888888	

	Total Eggs	11	
	Total Larvae	4	
	Percent Sorted	25.0 25.0 1000.0	
	Stand- ard Haul Factor	22222222222222222222222222222222222222	
	Vol. Water Strained (cu. m)	659888889889899999999999999999999999999	
7507	Tow Depth	22209 22200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2000 2	
ise	Time (PST)	11455 000125 000125 000125 000125 000020 00000 000020 000020 000020 000020 000020 000020 000020 000020 00000 000020 0000020 000020 000020 000020 000020 000020 000020 000020 000020 000000	
CalCOFI Cru	Tow Date yr. mo. day	75 06 24 75 06 24 75 06 25 75 06 25 75 06 25 75 06 25 75 06 25 75 06 25 75 06 27 75 06 27 75 06 27 75 06 27 75 06 28 77 06 28 77 07 01 75 07 01	
	Ship Code	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
	Long.(W) deg. min.	1117 48 .0 1118 318 .0 1119 100 .0 1119 100 .0 1120 310 .5 1110 520 .2 1110 520 .3 1110 10	
	Lat.(N) deg. min.	331 256.0 331 256.5 331 256.4 330 346.5 330 346.8 331 256.5 331 256.5 331 256.5 331 342.0 331 342.0 331 342.0 331 36.5 331 36.5 331 36.5 330 257.7 330 257.8 330 257.3 330 257.3 340 257.3 350 257.3 360 257.3 370 257.3	
	Station	7	l
	Line S	997.0 997.0 997.0 997.0 997.0 997.0 997.0 993.0 993.0 993.0 997.0 997.0	

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	Total Eggs	111 22 447 110 110 110 110 110 110 110 110 110 11
	Total Larvae	79 100 100 100 100 100 100 100 10
	Percent Sorted	1000 1000 1000 1000 1000 1000 1000 100
	Stand- ard Haul Factor	12222222222222222222222222222222222222
	Vol. Water Strained	1135 73115 73115 73115 73116 731
7507	Tow Depth	2200022 2200022 221020066666666666666666
ise	Time (PST)	00000000000000000000000000000000000000
CalCOFI Cru	Tow Date yr. mo. day	75 07 02 175 07 02 175 07 02 175 07 02 175 07 02 175 07 02 175 07 02 175 07 03 175 07 03 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 05 175 07 06 175 07 07 06 175 07 07 07 07 07 07 07 07 07 07 07 07 07
	Ship Code	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	Long.(W) deg. min.	1115 52.0 1115 52.0 1116 59.7 1116 19.7 1117 18.6 1117 18.6 1118 19.1 1118 19.1 1118 19.1 1119 19.1
	Lat.(N) deg. min.	29 449.8 29 449.8 29 366.1 29 366.1 29 366.1 29 26.0 20 27.0 20 27.0 20 27.0 20 28 28.0 20 27.0 20 2
	Station	330 330 330 330 330 330 330 330
	Line S	120.00

	Total Eggs	281
	Total Larvae	17 17 18 18 19 19 10 10 10 10 10 10 10 10 10 10 10 10 10
	Percent Sorted	1000.0 10
	Stand- ard Haul Factor	22.22.22.22.22.22.22.22.22.22.22.22.22.
	Vol. Water Strained (cu. m)	7418 877748 877748 877748 87777 8777 877
100	Tow Depth	2006 2006 2006 2006 2008 2008 2008 2008
a rac	Time (PST)	11000000000000000000000000000000000000
Calcori Ciui	Tow Date yr. mo. day	75 07 09 07 09 07
	Ship	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	Long.(W) deg. min.	1115 1115 1116 1117 1117 1117 1117 1117
	Lat.(N) deg. min.	
	Station	0.000000000000000000000000000000000000
	Line	

CalCOFI Cruise 7507

Total Eggs	2160	1637	73	18	11	101	81	41	397
Total Larvae	91	492	30	53	34	71	45	96	32
Percent Sorted	100.0	100.0	100.0	25.0	25.0	25.0	25.0	100.0	100.0
Stand- ard Haul Factor	1.44	2.16	2.35	2.66	2.54	3.21	2.74	2.85	2.77
Vol. Water Strained (cu. m)	88	150	256	286	804	632	764	732	772
Tow Depth	13	32	09	9/	204	203	209	209	214
Time (PST)	1146	1248	1344	1441	1756	2110	0034	0526	1119
Tow Date yr. mo. day	07	0.7	75 07 14	0.7	0.7	0.7	07	07	0.7
Ship Code	AX	AX	AX	AX	AX	AX	AX	AX	ΑX
Long.(W) deg. min.	112 09.9		112 18.7						
Lat.(N) deg. min.			25 34.0						24 20.0
Station	20.7	22.0	23.0	24.0	30.0	35.0	40.0	50.0	0.09
Line S	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0

Total Eggs	94 1 1 1 6 4 5 5 5 6 4 5 5 5 6 4 5 5 5 6 4 5 5 6 4 5 5 6 4 5 5 6 4 5 5 6 4 5 5 6 4 5 6 4 5 6 4 5 6 4 5 6 4 5 6 4 5 6 4 5 6 4 5 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 4 6 6 6 4 6 6 6 4 6
Total Larvae	11144778 1 2 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Percent Sorted	25.0 25.0 25.0 25.0 25.0 25.0 25.0 1000.0 10
Stand- ard Haul Factor	11.22.22.22.22.22.22.22.22.22.22.22.22.2
Vol. Water Strained	157 169 179 179 179 179 179 179 179 17
Tow Depth	22002222222222222222222222222222222222
Time (PST)	00344 00344 11223333 1223333 12233333 12333333 12333333 12333333 123333 123333 123333 1233
Tow Date yr. mo. day	755 10 27 757 10 27 757 10 27 757 10 27 757 10 27 757 10 26 757 10 26 757 10 26 757 10 27 757 10 27 757 10 23 757 10 25 757 10 25
Ship	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
Long.(W) deg. min.	117 04.0 117 04.0 117 07.1 117 13.0 117 15.1 118 08.8 118 50.1 118 50.1 119 51.0 110 6 46.7 1116 54.8 1116 54.8 1116 20.0 1116 20.0 1116 21.3 1116 22.5 1116 22.5 1116 23.2 1119 04.2 1116 03.9
Lat.(N) deg. min.	2222284222383322233333333332223333333333
Station	33333333333333333333333333333333333333
Line	

	Total	1100 1100 1100 1100 1100 1100 1100 110
	Total Larvae	10 33 34 36 36 36 36 36 36 37 36 37 37 37 37 37 37 37 37 37 37
	Percent Sorted	25.0 1000
	Stand- ard Haul Factor	22.22222222222222222222222222222222222
	Vol. Water Strained (cu. m)	7777 7788 7786
010	Tow Depth	2011 2007 2006 2007 2007 2008 2009 2007 2009 2009 2009 2009 2009 2009
2610	Time (PST)	0352 0352 0352 116524 116524 13004 13004 13004 13004 13004 13006 130
carcor of	Tow Date yr. mo. day	75 10 19 75 10 19 75 10 19 75 10 19 75 10 19 75 10 19 75 10 18 75 10 18 75 10 18 75 10 18 75 10 18 75 10 18 75 10 15 75 10 15 75 10 16 75 10 16 75 10 16 75 10 16 75 10 16 75 10 16 75 10 16 75 10 16 75 10 17 75 10 16 75 10 17 75 10 18 75 10 18 75 10 18 75 10 18 75 10 18 75 10 18 75 10 13 75 10 13 75 10 13 75 10 13 75 10 13 75 10 13 75 10 13
	Ship	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
	Long.(W) deg. min.	1116 22.8 1118 42.0 1118 02.1 1119 188.9 1119 188.9 1115 44.3 1115 52.0 1116 59.5 1116 59.5 1117 20.0 1118 18.0 1118 18.0 1118 18.0 1118 18.0 1118 18.0 1118 18.0 1119 18.0
	Lat.(N) deg. min.	30 20.8 30 110.0 229 30.9 229 30.9 30.9 30.9 30.9 30.9 30.9 30.9 30.9
	Station	35.00 36.00 37
	Line	10000000000000000000000000000000000000

CalCOFI Cruise 7510

	850480929155008666678095147288677818551547
Total	28 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Total Larvae	10893 10897 10897 10897 10897 10897 116 116 116 119 119 119 119 119 119 119
Percent Sorted	1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0 1000.0
Stand- ard Haul Factor	22222222222222222222222222222222222222
Vol. Water Strained (cu. m)	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Tow Depth	22122 22222 22222 22222 22222 22222 22222 2222
Time (PST)	000112 223423 223423 223423 223423 221442 00112443 001122 001122 00122 0
Tow Date yr. mo. day	75 10 15 17 10 15 17 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 15 10 16 14 15 10 16 15 10 16 16 16 16 16 16 16 16 16 16 16 16 16
Ship Code	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Long.(W) deg. min.	1114 004 1114 105.5 1114 106.8 1115 114.0 1115 114.0 1115 114.0 1115 114.0 1115 117.0 1116 117.0 1117 107.0 1118 117.0 1118 117.0 1118 117.0 1118 117.0 1119 117.0 1110 117.0 117
Lat.(N) deg. min.	
Station	22222222222222222222222222222222222222
Line	

CalCOFI Cruise 7510

	Total Eggs	58	282	8	2	155	17	11	73	726	364	230	09	2	7	19	69	62
	Total Larvae	16	2	1	2	16	9	43	13	599	749	44		2	1	3	17	59
	Percent Sorted	100.0	100.0	100.0	25.0	25.0	25.0	25.0	100.0	100.0	100.0	100.0	25.0	25.0	25.0	25.0	100.0	100.0
01	ard Haul Factor	2.68	2.41	1.62	2.76	2.84	3.18	2.81	3.06	1.89	2.06	2.57	2.87	2.87	2.76	2.52	3.15	3.08
Vol.	Water Strained (cu. m)	267	349	314	758	744	684	738	723	72	159	189	235	919	755	805	701	889
	Tow Depth (m)	72	84	51	210	212	217	208	221	14	33	49	89	177	209	203	221	212
	Time (PST)	0542	0620	0728	1020	1240	0810	0158	0755	2331	2023	2140	2042	1755	1433	1204	0535	0013
	Tow Date yr. mo. day	10	10	10	10	10	10	75 10 07	10	10	10	10	10	10	10	10	10	10
	Ship	AX																
	Long.(W) deg. min.	112 40.3	112 44.6	112 48.0	113 07.4	113 26.5	113 45.5	114 24.0	115 02.0	112 09.4	112 14.9	112 19.0	112 23.2	112 44.3	113 04.5	113 21.2	114 01.8	114 45.2
	Lat.(N) deg. min.	08.	06.	04.	54.	44	34	14.	54.	40.	36.	34.	32.	22.	10.	00	38.	24 19.2
	Station	23.0	24.0	25.0	30.0	35.0	40.0	50.0	60.0	20.7	22.0	23.0	24.0	30.0	35.0	40.0	50.0	0.09
	ine 9																	7.0

CalCOFI Cruise 7511

Total Eggs	2002 2002 2009 2009 2009 2009 2009 2009	14
Total Larvae	22 22 23 24 24 25 25 26 26 26 26 26 26 26 26 26 26 26 26 26	
Percent Sorted	25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0	S.
Stand- ard Haul Factor	22.22.22.22.22.22.22.22.22.22.22.23.33.3	9 •
Vol. Water Strained (cu. m)	22238 66339 766339 70529	1
Tow Depth	2009 2009 2009 2009 2009 2009 2009 2009	208
Time (PST)	00210 00330 00215 00216 00210 00210 00200 00200 00220 00220 00220 00220 00220 00220 00220 00220 00220 00220 00220 00220 00220 00220 00220	05
Tow Date yr. mo. day	755 11 11 11 11 11 11 11 11 11 11 11 11 1	5 11 0
Ship	888888888888888888888888888888888888888	QC CC
Long.(W) deg. min.	122 23.2 23.2 23.2 23.2 23.2 23.2 23.2 2	20 40.
Lat.(N) deg. min.	- $ -$	4 22.
Station	0.000000000000000000000000000000000000	m
Line	660.0 660.0	0

CalCOFI Cruise 7511

Total Eggs	12 16 2 1		22 22 23 23			395 395 121 117		4 20	161 119 12 13 13 4 4	
Total Larvae	5 2 16 6					525 57 70 70 70		44410	17 81 44 42 65 59 11 11	
Percent Sorted	20000	000	255.			0000		00222	25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0	
Stand- ard Haul Factor			91.00	9.7	96.4.	86741	io`œ` œ`4 :∠		22.25 22.26 22.90 33.30 33.35 23.35 23.35 23.35	
Vol. Water Strained	047	000	195 319 770 764	7990-	1 C B C B	$\omega \omega \omega \omega \omega$	5652 710 726 754 171	062730	179 315 726 716 642 642 646 180 631	
Tow Depth		201		2 T 4 5 L		- M M M M M M			40 83 212 212 212 206 64 212 213	
Time (PST)	20 32 73 24	32 32 84 15	25 40 52 73	4044	02 02 13 13	4 2 3 1 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	/2644 2014 111 111	65 65 65 65 65 65	1910 2145 2325 0110 0205 2220 1925 1520 0710	
Tow Date yr. mo. day	5 11 0 5 11 0 5 11 0	5 11 0 5 11 0 5 10 2	55 10 2 55 10 2 55 10 2 5 10 2	2000 2000 2000 2000 2000 2000 2000 200	55 10 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	22222	22222 22222 22222 22222	22222 22222 2210222 2210222	75 10 24 75 10 24 75 10 24 75 10 25 75 10 28 75 10 28 75 10 28 75 10 28 75 10 28	
Ship Code	8686	3555	8666	3888	38888	88888	98888	36666	6666666666	
Long.(W) deg. min.	20 44. 20 48. 21 09.	22 31. 23 13. 19 47.	19 49. 19 52. 19 54.	20 02. 19 19. 19 24.	19 34. 19 34. 19 41.	119 55. 20 03. 20 08.	20 24. 22 45. 22 47. 18 59.	19 06. 19 06. 19 10. 18 26.	118 29.0 118 33.2 118 37.5 118 40.0 119 58.2 119 39.5 120 00.0	
Lat.(N) deg. min.	4 21. 4 18. 4 08.	3 28. 4 24.	4 22. 4 21. 4 21.	4 17.	4444		4 2 3 3 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	3 5 5 7	333 533 333 533 333 553 333 260 333 000 32 3000	
Station	4.000	3000	4. 5. 6.	.607	7 K 4 4 4 1	0000			28888888888888888888888888888888888888	
Line	0000						\dots	30357	87.0 87.0 87.0 87.0 87.0 87.0	

	Total Eggs	689 600 600 600 600 600 600 600 600 600 60	
	Total Larvae	38 118 122 122 122 139 60 141 139 139 141 104 104 104 104 104 104 104 104 104	
	Percent Sorted	1000.0 1000.0	
	Stand- ard Haul Factor	23111222222222222222222222222222222222	
	Vol. Water Strained	718 718 719 719 719 719 710 710 710 710 710 710 710 710	
110	Tow Depth (m)	22 22 22 22 22 22 22 22 23 23 23 23 23 2	
carcori cinise	Time (PST)	00120 00120 00120 00120 0020 00220 0020 00	
	Tow Date yr. mo. day	75 10 28 75 10 28 75 10 24 75 10 24 75 10 24 75 10 23 75 10 22 75 10 20	
	Ship	888888888888888888888888888888888888888	
	Long.(W) deg. min.	1221 42.0 1118 09.4 1118 13.5 1118 13.5 1118 21.9 117 449.5 117 53.5 118 55.5 119 28.6 117 27.7 117 29.0 117 34.0 118 32.0 119 34.0 117 14.5 117 14.5	
	Lat.(N) deg. min.	32 1933 33 34 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
	Station	880.0 80.0	
	Line S	99999999999999999999999999999999999999	

CalCOFI Cruise 7512

Total Eggs	2 1200 1 1000 1	7
Total Larvae	222 1055 1055 1055 1055 1055 1055 1055 1	
Percent Sorted	1000 1000 1000 1000 1000 1000 1000 100	00. 00. 25.
Stand- ard Haul Factor		60.0
Vol. Water Strained (cu. m)	70000000000000000000000000000000000000	
Tow Depth		192
Time (PST)	1184	31 03 15
Tow Date yr. mo. day	27.77.75.55.77.75.75	5 12 0 5 12 0 5 12 0
Ship Code	8 8888888888888888888888888888888888888	3888
Long.(W) deg. min.	4000200484500000000000000000000000000000	17 17. 17 18. 17 21.
Lat.(N) deg. min.		2 57. 2 58. 2 54.
Station	202224444444492000000000000000000000000	8000
Line S		

TABLE 1. (cont.)

157 105 129 161 173 Total Eggs Total Larvae 337 335 448 23 Percent Sorted 25.0 25.0 25.0 25.0 25.0 Stand-ard Haul Factor 3.16 3.01 2.78 2.98 3.00 Strained (cu. m) Vol. Water 672 689 716 715 711 692 Tow Depth (m) 213 208 199 213 214 218 Time (PST) 0315 0445 1700 1415 1120 Tow Date yr. mo. day 00 00 14 14 13 75 75 75 75 75 Ship 555555 Long.(W) deg. min. 26.6 31.0 51.5 11.5 32.0 117 117 117 1118 1118 Lat.(N) deg. min. 52.7 50.5 40.0 30.0 20.0 32232 Station 29.0 30.0 35.0 40.0 50.0 93.0 93.0 93.0 93.0

7512

CalCOFI Cruise

TABLE 2A. Pooled occurrences of fish larvae taken during CalCOFI cruises in 1974.

Rank	Taxon	Occurrences
1	Engraulis mordax	155
2	Citharichthys spp.	96
3	Sebastes spp.	94
4	Sternoptychidae	63
5	Protomyctophum crockeri	62
6	Sciaenidae	58
7	Leuroglossus stilbius	52
8	Vinciguerria lucetia	48
9	Triphoturus mexicanus	38
10	Lampanyctus spp.	35
11	Citharichthys stigmaeus	33
12	Cyclothone spp.	30
13	Diogenichthys laternatus	29
13	Stenobrachius leucopsarus	29
15	Disintegrated fish larva	27
16	Tarletonbeania crenularis	26
16	Gobiidae	26
18	Paralichthys californicus	25
19	Diogenichthys atlanticus	22
20	Unidentified fish larva	21
21	Idiacanthus antrostomus	18
22	Lestidiops ringens	16
22	Merluccius productus	16
24	Bathylagus wesethi	15
25	Symbolophorus californiensis	14
26	Bathylagus ochotensis	13
27	Myctophidae	12
28	Lampanyctus ritteri	11
28	Sardinops sagax	11
30	Chauliodus macouni	10
30	Sebastes paucispinis	10
30	Gonostomatidae	10
33	Gonichthys tenuiculus	9
33	Melamphaes spp.	9
33	Stomias atriventer	9
33	Clinidae	9
37	Hippoglossina stomata	8
37	Nansenia crassa	8
37	Symphurus spp.	8
37	Microstoma microstoma	8
37	Tetragonurus cuvieri	8
42	Synodus spp.	7
42	Trachipteridae	7
42	Rosenblattichthys volucris	7
45	Ophidion scrippsae	6
45	Peprilus simillimus	6
45	Hypsoblennius spp.	6
45	Myctophum nitidulum	6

TABLE 2A. (cont.)

Rank	Taxon	Occurrences
45	Danaphos oculatus	6
45	Diogenichthys spp.	6
45	Argentina sialis	6
45	Icichthys lockingtoni	6
45	Hygophum atratum	6
45	Parophrys vetulus	6
55	Hypsopsetta guttulata	5
55	Ceratoscopelus townsendi	5 5 5 5
55	Paralepididae	5
55	Cottidae	5
55	Chiasmodontidae	5
55	Bathylagus milleri	5
61	Scopelogadus bispinosus	4
61	Xystreurys liolepis	4
63	Atherinidae	3
63	Syngnathus spp.	3
63	Macroramphosus gracilis	3
63	Scorpaenichthys marmoratus	4 3 3 3 3 2 2
67	Anguilliformes	2
67	Lampadena urophaos	
67	Zaniolepis spp.	2
67	Pleuronichthys ritteri	2
71	Ceratioidei	1
71	Sebastolobus spp.	1
71	Pleuronichthys decurrens	1
71	Macropinna microstoma	1
71	Scopelosaurus spp.	1
71	Lepidopus xantusi	1
71	Cyclopteridae	1
71	Ichthyococcus spp.	1
71	Pleuronichthys spp.	1
71	Agonidae	1
71	Lampanyctus regalis	1
71	Blennioidei	1
71	Coryphaena hippurus	1
71	Microstomus pacificus	1
71	Sebastes jordani	1
71	Stomiiformes	1
71	Bathylagus spp.	1
71	Bathylagus pacificus	1
71	Pleuronichthys verticalis	1
71	Cololabis saira	1

TABLE 2B. Pooled occurrences of fish larvae taken during CalCOFI cruises in 1975.

Rank	Taxon	Occurrences
1	Engraulis mordax	842
2	Sebastes spp.	560
3	Leuroglossus stilbius	363
4	Citharichthys spp.	357
5	Stenobrachius leucopsarus	351
6	Triphoturus mexicanus	342
7	Protomyctophum crockeri	299
8	Merluccius productus	279
9	Bathylagus ochotensis	273
10	Sciaenidae	260
11	Sternoptychidae	218
12	Tarletonbeania crenularis	215
13	Disintegrated fish larva	196
14	Unidentified fish larva	183
15	Cyclothone spp.	165
16	Vinciguerria lucetia	164
17	Bathylagus wesethi	156
18	Lampanyctus spp.	151
19	Lampanyctus ritteri	149
20	Diogenichthys atlanticus	141
21	Citharichthys stigmaeus	133
22	Melamphaes spp.	130
23	Gobiidae	121
24	Symbolophorus californiensis	120
25	Trachurus symmetricus	119
26	Diogenichthys laternatus	114
27	Paralichthys californicus	106
28	Pleuronichthys verticalis	100
29	Hypsoblennius spp.	82
30	Myctophidae	80
31	Chauliodus macouni	78
32	Sebastes paucispinis	73
33	Diaphus spp.	70
34	Clinidae	67
35	Ceratoscopelus townsendi	66
36	Stomias atriventer	59
36	Argentina sialis	59
38	Serranidae	55
39	Peprilus simillimus	54
40	Sardinops sagax	51
41	Parophrys vetulus	50
42	Danaphos oculatus	49
43	Icichthys lockingtoni	46
44	Cottidae	44
45	Sebastes jordani	42
46	Synodus spp.	41
46	Bathylagus spp.	41
48	Microstoma microstoma	40

TABLE 2B. (cont.)

Rank	Taxon	Occurrences
49	Bathylagus pacificus	39
49	Lestidiops ringens	39
51	Hippoglossina stomata	36
52	Pleuronichthys ritteri	33
53	Idiacanthus antrostomus	30
54	Lampanyctus regalis	29
55	Symphurus spp.	26
55	Halichoeres spp.	26
55	Nansenia candida	26
58	Rosenblattichthys volucris	23
58	Zaniolepis spp.	23
58	Oxyjulis californica	23
58	Sebastolobus spp.	23
62	Myctophum nitidulum	22
62	Chromis punctipinnis	22
64	Sebastes macdonaldi	21
65	Lyopsetta exilis	20
66	Scopelarchus spp.	19
67	Trachipteridae	18
67	Ophidion scrippsae	18
67	Poromitra spp.	18
70	Sebastes levis	17
70	Paralepididae	17
70	Nansenia crassa	17
70	Chilara taylori	17
74	Hygophum atratum	16
75	Tetragonurus cuvieri	15
75	Ophidiiformes	15
75	Scorpaenichthys marmoratus	15
75	Etrumeus acuminatus	15
75	Diogenichthys spp.	15
80	Gonichthys tenuiculus	14
81	Bathylagus milleri	13
81	Cyclopteridae	13
81	Sebastes aurora	13
81	Notolychnus valdiviae	13
85	Prionotus spp.	12
85	<i>Xystreurys liolepis</i>	12
85	Gonostomatidae	12
88	Chiasmodontidae	11
88	Ceratioidei	11
88	Agonidae	11
88	Scorpaena spp.	11
92	Scopelosaurus spp.	10
92	Lepidopus xantusi	10
92	Carangidae	10
92	Gobiesocidae	10
96	Sphyraena argentea	9
96	Microstomus pacificus	9

TABLE 2B. (cont.)

Rank	Taxon	Occurrences
96	Hygophum reinhardtii	9
99	Scomber japonicus	8
99	Anguilliformes	8
99	Semicossyphus pulcher	8
99	Hypsopsetta guttulata	8
99	Syngnathus spp.	8
99	Haemulidae	8
99	Ichthyococcus spp.	8
106	Electrona rissoi	7
106	Cololabis saira	7
106	Atherinidae	7
109	Notoscopelus resplendens	6
110	Brosmophycis marginata	
110	Seriola lalandi	5
110	Lampadena urophaos	5
110	Notolepis risso	5 5 5 5 5
110	Scopelogadus bispinosus	5
110	Gerreidae	5
116	Oxylebius pictus	4
116	Glyptocephalus zachirus	4
116	Blennioidei	4
116	Coryphaena hippurus	4
120	Benthalbella dentata	3
120	Benthosema pterota	3
120	Loweina rara	3 3 3 3 3 3 3
120	Sarda chiliensis	3
120	Medialuna californiensis	3
120	Pleuronichthys decurrens	3
120	Macrouridae	3
120	Hypsypops rubicundus	3
120	Lepidopsetta bilineata	3
120	Brama spp.	3
120	Pleuronichthys coenosus	3
131	Scopelarchidae	2
131	Psettichthys melanostictus	2
131	Caulolatilus princeps	2
131	Aristostomias scintillans	2
131	Scopelarchoides nicholsi	2
136	Valenciennellus stellatus	1
136	Pleuronichthys spp.	1
136	Anoplopoma fimbria	1
136	Scombridae	1
136	Icosteus aenigmaticus	1
136	Macropinna microstoma	1
136	Photonectes spp.	1
136	Diplophos taenia	1
136	Polynemidae	1
136	Girella nigricans	1
136	Platichthys stellatus	1

TABLE 2B. (cont.)

Rank	Taxon	Occurrences
136	Howella brodiei	1
136	Exocoetidae	1
136	Opisthonema spp.	1
136	Ophiodon elongatus	1
136	Hexagrammidae	1
136	Stomiiformes	1

TABLE 3A. Pooled numbers of fish larvae taken during CalCOFI cruises in 1974. Counts are adjusted for percent of sample sorted and standard haul factor (see text).

Rank	Taxon	Count
1	Engraulis mordax	39366
2	Sebastes spp.	6042
3	Citharichthys spp.	2306
4	Vinciguerria lucetia	1604
5	Sciaenidae	1350
6	Leuroglossus stilbius	1246
7	Diogenichthys laternatus	893
8	Protomyctophum crockeri	888
9	Stenobrachius leucopsarus	643
10	Sebastes paucispinis	628
11	Sternoptychidae	613
12	Citharichthys stigmaeus	552
13	Lampanyctus spp.	490
14	Tarletonbeania crenularis	487
15	Triphoturus mexicanus	371
16	Sardinops sagax	289
17	Bathylagus ochotensis	281
18	Cyclothone spp.	280
19	Diogenichthys atlanticus	261
20	Merluccius productus	209
21	Paralichthys californicus	204
22	Disintegrated fish larva	194
23	Gobiidae	177
24	Unidentified fish larva	153
25	Idiacanthus antrostomus	147
26	Bathylagus wesethi	141
27	Symbolophorus californiensis	124
28	Gonichthys tenuiculus	100
29	Chauliodus macouni	97
30	Stomias atriventer	91
31	Lestidiops ringens	89
32		84
	Myctophidae	76
33	Diogenichthys spp.	76
33	Lampanyctus ritteri	75
35	Icichthys lockingtoni	75
35	Melamphaes spp.	70
37	Trachipteridae	69
38	Synodus spp.	68
39	Myctophum nitidulum	66
40	Argentina sialis	65
41	Symphurus spp.	60
42	Microstoma microstoma	58
43	Bathylagus milleri	57
44	Rosenblattichthys volucris	
45	Macroramphosus gracilis	52
46	Peprilus simillimus	51
46	Parophrys vetulus	51
46	Clinidae	51

TABLE 3A. (cont.)

Rank	Taxon	Count
49	Hygophum atratum	48
50	Gonostomatidae	45
51	Nansenia crassa	40
52	Paralepididae	39
52	Tetragonurus cuvieri	39
54	Xystreurys liolepis	37
55	Ceratoscopelus townsendi	36
56	Chiasmodontidae	32
56		
	Cottidae	32
58	Lampadena urophaos	30
59	Hypsoblennius spp.	29
59	Danaphos oculatus	29
61	Hypsopsetta guttulata	22
62	Hippoglossina stomata	21
63	Ophidion scrippsae	17
64	Agonidae	13
65	Scopelogadus bispinosus	12
65	Bathylagus pacificus	12
65	Blennioidei	12
65	Microstomus pacificus	12
65	Lampanyctus regalis	12
65	Atherinidae	12
71	Pleuronichthys decurrens	11
71	Cololabis saira	11
73	Zaniolepis spp.	9
74	Scorpaenichthys marmoratus	8
74	Sebastes jordani	8
76	Coryphaena hippurus	6
76	Syngnathus spp.	6
78	Anguilliformes	5
78	Pleuronichthys ritteri	5
80	Macropinna microstoma	3
80	Sebastolobus spp.	3
80	Bathylagus spp.	3
80	Lepidopus xantusi	3
80	Cyclopteridae	3
80	Ceratioidei	3
80	Ichthyococcus spp.	2
80		3 3 3
	Stomiiformes	3
80	Scopelosaurus spp.	3
89	Pleuronichthys spp.	2
89	Pleuronichthys verticalis	2
	Moto?	62101
	Total	02101

TABLE 3B. Pooled numbers of fish larvae taken during CalCOFI cruises in 1975. Counts are adjusted for percent of sample sorted and standard haul factor (see text).

Rank	Taxon	Count
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	Engraulis mordax Merluccius productus Sebastes spp. Citharichthys spp. Leuroglossus stilbius Triphoturus mexicanus Stenobrachius leucopsarus Sciaenidae Vinciguerria lucetia Bathylagus ochotensis Trachurus symmetricus Protomyctophum crockeri Tarletonbeania crenularis Citharichthys stigmaeus Bathylagus wesethi Diogenichthys laternatus Sebastes jordani Sternoptychidae	838883 84347 45007 34806 28735 18081 14507 10537 8473 7171 4875 3911 3880 3828 3470 3082 2907 2627
19 20 21 22 23 24 25 26 27 28 29 30 31 32	Cyclothone spp. Sardinops sagax Lampanyctus ritteri Disintegrated fish larva Unidentified fish larva Diogenichthys atlanticus Sebastes paucispinis Lampanyctus spp. Gobiidae Paralichthys californicus Diaphus spp. Melamphaes spp. Symbolophorus californiensis Hypsoblennius spp.	2441 2360 2174 1998 1946 1658 1599 1369 1327 1151 1132 1050 1048 1032
33 34 35 36 37 38 39 40 42 43 44 45 46 47	Pleuronichthys verticalis Peprilus simillimus Clinidae Serranidae Parophrys vetulus Argentina sialis Myctophidae Chromis punctipinnis Sarda chiliensis Cottidae Symphurus spp. Ceratoscopelus townsendi Stomias atriventer Chauliodus macouni Halichoeres spp.	961 898 872 827 798 714 685 683 670 620 596 571 556 553 443

TABLE 3B. (cont.)

Rank	Taxon	Count
48	Bathylagus pacificus	439
49	Synodus spp.	428
50	Bathylagus spp.	409
51	Carangidae	400
52	Danaphos oculatus	364
53	Icichthys lockingtoni	358
54	Sebastes macdonaldi	332
55	Sebastes levis	328
56	Etrumeus acuminatus	270
57	Lampanyctus regalis	264
58	Hippoglossina stomata	254
59	Microstoma microstoma	247
60	Zaniolepis spp.	240
61	Lyopsetta exilis	235
62	Sebastolobus spp.	229
62	Lestidiops ringens	229
64	Pleuronichthys ritteri	210
65	Nansenia candida	202
66	Ophidiiformes	193
67	Idiacanthus antrostomus	180
68	Oxyjulis californica	157
		150
69	Chilara taylori	148
70	Bathylagus milleri	
71	Ophidion scrippsae	147
72	Scorpaenichthys marmoratus	146
73	Scorpaena spp.	138
74	Nansenia crassa	137
75	Paralepididae	130
76	Sebastes aurora	109
77	Xystreurys liolepis	106
78	Prionotus spp.	103
79	Trachipteridae	100
80	Poromitra spp.	99
81	Anguilliformes	98
82	Tetragonurus cuvieri	97
83	Diogenichthys spp.	95
84	Hygophum atratum	94
84	Myctophum nitidulum	94
86	Gonichthys tenuiculus	90
87	Agonidae	86
88	Haemulidae	84
89	Notolychnus valdiviae	82
90	Scopelarchus spp.	81
91	Lepidopus xantusi	80
92	Rosenblattichthys volucris	78
93	Semicossyphus pulcher	77
94	Gonostomatidae	74
95	Atherinidae	73
95	Seriola lalandi	73
J J		

TABLE 3B. (cont.)

Rank	Taxon	Count
97	Microstomus pacificus	71
98	Gobiesocidae	66
99	Cyclopteridae	63
100	Scomber japonicus	62
101	Hypsopsetta guttulata	61
101	Sphyraena argentea	61
103	Brosmophycis marginata	57
104	Benthosema pterota	54
105	Scopelosaurus spp.	53
106	Chiasmodontidae	51
107	Cololabis saira	49
108	Ceratioidei	48
109	Ichthyococcus spp.	46
109	Hygophum reinhardtii	46
111	Medialuna californiensis	45
111	Blennioidei	45
113	Caulolatilus princeps	43
114	Syngnathus spp.	41
115	Notoscopelus resplendens	40
116	Glyptocephalus zachirus	39
117	Oxylebius pictus	38
118	Macrouridae	37
119	Pleuronichthys decurrens	35
120	Hypsypops rubicundus	34
121	Gerreidae	31
122	Psettichthys melanostictus	29
123	Benthalbella dentata	28
124	Scombridae	26
125	Lepidopsetta bilineata	25
126	Lampadena urophaos	22
126	Coryphaena hippurus	22
128	Electrona rissoi	20
129	Brama spp.	18
130	Notolepis risso	17
130	Scopelogadus bispinosus	17
132	Valenciennellus stellatus	14
132	Scopelarchidae	14
134	Girella nigricans	13
135	Exocoetidae	12
135	Macropinna microstoma	12
137	Icosteus aenigmaticus	11
137	Stomiiformes	11
137	Polynemidae	11
137	Platichthys stellatus	11
141	Hexagrammidae	10
142	Loweina rara	9
143	Pleuronichthys coenosus	8
144	Scopelarchoides nicholsi	7
145	Aristostomias scintillans	6

TABLE 3B. (cont.)

Rank	Taxon	Count
146 147 147 147 150 150	Pleuronichthys spp. Ophiodon elongatus Diplophos taenia Photonectes spp. Anoplopoma fimbria Opisthonema spp. Howella brodiei	5 3 3 2 2 2
	Total	1162305

TABLE 4. Numbers of fish larvae taken on stations occupied during CalCOFI cruises in 1975. Counts are adjusted for percent of sample sorted and standard haul factor (see text). Average number is given for stations occupied twice during a single month. Unoccupied stations are indicated by a dash.

					Anguil	Anguilliformes	S				 	! ! !
STATION	NOV.	DEC.	JAN	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
3.0 70	0.0		0.0	1 	0.0	0.0	0.0	1 1	1 1	28.3	2.8	1 1
97.0 30.		0 0		1 1	0.0				ŀ	2.6	1	1
27.0 36.	ı)))	0.0	1	1	i	0.0	1		ŀ	ı
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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7.0 80.		ı	ċ	ı				ı	ł	4	1	ı
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STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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07.0 50.	1			ŀ	1				١		1	1
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13.0 45.	1			t		1			ı	0	ı	ı
13.0 60.	ı			ı	13.2	1			ì		ı	1
17.0 40.	1		0.0	ı	1	1			ı		ı	i
17.0 45.	ļ		0.0	1	1	ı			ı		ı	i
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20.0		0	4		0				ı		ı	ı
30.0 26.	i		ı			i		8		0	1	
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30.0 60.	1		ı			ı	ı		1		1	ł
37.0 35.	ı	- 6	I	0.0	ı	ı	1		ı		ļ	ı
37.0 50.	i	•	ı		ı	ı	1		1		1	ŧ
37.0 60.	ı	3.0	ι		ı	1	ŀ		ı		ł	ı
					Bathylagus	agus spp	p.	1		1	1	
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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TABLE 4. (cont.)

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7.0 50.		ł		ı	0.0		i		1	0.0	1	. 75
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3.0 30.	i			ı	0.0			1	ı	0	i	77
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				Bā	Bathylagus	us milleri	eri					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC
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TABLE 4. (cont.)

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	OCT.		ι	I	l	I	ı	I	ı	1	I	I	ı	ı		0.0	ı		OCT.	ı	ı	ł	i	ı	i	ŀ	ı	١	1	1	i	1	I	1	1	ı	i		1 1	ı	ı	ı	ı
	SEP.		1	I	ŀ	ı	ı	ŀ	ı	ı	1	ı	ı	1	ı	i	1		SEP.	ı	1	1	ı	ı	ı	i	1	I	!	1	1	1	I	t	1	ı	I	ł I	l l	1	ŀ	ł	1
•	JULY			0.0											0.0	2.9	ı		JULY									l	1 1	ı	ı	0.0			(0.0	ı	1	H	0.0		0.0	
(cont.	JUNE		I	-	1	1	í	1	ı	ı	ı	1	ı	1	ı	1	0.0	ochotensis	JUNE		ı	ı	ı	ı	Ι	1	I	ı		1	1	1	ı	ı	I	ı	i	1	1 1	1	ı	ı	1
illeri	MAY		1	t	ı	ı	0.0	ŀ								0.0			MAY	 	ı	i	1	í	١	ı	ı	ı	i	3 1	ł	ı	ı	ı	1	I	ı	I	1 1	0.0)
Bathylagus milleri	MAR.		1	i	ı	ı	ı	í	1	1	0.0	0.0				0.0		Bathylagus	MAR.		ı	1	61.0	146.6	ı	ı	ı	1 4	10.1	18 2	3.0	•	ı	ı	ı	ı	ı	i	1 1	l i	ı	1	ı
Bathy	FEB.	1		÷									•	i	ı	ł	ı	Bai	FEB.	17.8	67.9	11.6	Į	ı		35.4	16.2	7.6	í	l i	ı	6.5		37.5		36.4	9	•	22.7	7 -	65.6	94.4	51.9
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TABLE 4. (cont.)

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JUNE	ι	ł	ı	ı	I	!	ı	1	ı	ł	1	1	1	i	1	1	1	i	ı	1	ı	ł	1 1	ŀ	1	1	ì	ı	ı	1 1	ı	ı	1	ı	t	1	1	ι	ı	ŀ	ı	
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NOV	0	- 0	- 0	- 0	- 0	- 0	- 0	- 0	ι ο C	1	1	1	1	1	1	- 0		- 0	-	- 0			0		C	0	0	0.	0				0	0	0	1	0.	0.	0.		- 0	
STATION	0.0 70.	0.0 80.	0.0 90.	.0 50.	3.0 53.	3.0 60.	3.0 65.	3.0 70.	3.0 80	3.0	7.0	7 0 51	7 0 55	7.0 60.7	7.0 65.	7.0 70.	7.0 80.	7.0 90.	0.0 50.	0.0 54.	0.0 55.	0.0 60.	0.0 70.	0.0	1 5 43	1.5 45.	3.0 39.	3.0 41.	3.0 43.	3.0 45.	3.0 48.	3.0 55	3.0 60.	3.0 70.	3.0 80.	3.0 90.	5.0 38.	5.0 39.	5.0 40.	7.0 32.	7.0 34.	

1	DEC.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0
 	NOV.	000000 80000
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(-	JULY	000000000000000000000000000000000000000
(cont.	JUNE	
otensis	MAY	23.4 23.4 23.4 23.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
Bathylagus ochotensis	MAR.	12.7 12.7 60.64 60.64 60.64 60.64 111.3 12.7 12.7 13.7 13.7 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10
Bathyla	FEB.	
	JAN.	10.0 10.0
	DEC.	00000100 00001
	NOV.	
	STATION	87.0 87.0 87.0 87.0 87.0 87.0 87.0 87.0

TABLE 4. (cont.)

Bathylagus ochotensis (cont.)

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0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
9 0 0 0 0 0 0 0 0 0 0 0 0 0 0
99 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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3
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2 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7
10.00
10.0
1000 - 0.
1000 - 0.
9 0.0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
FE JULY SEP. OCT. NOV
B JULY SEP. OCT. NOV 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
E JULY SEP. OCT. NOV 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
E JULY SEP. OCT. NOV 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
IE JUI,Y SEP. OCT. NOV 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
JULY SEP. OCT. NOV 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
.0 0.
0

TABLE 4. (cont.)

					Bathyla	Bathylagus pacificus	sificus	(cont.		 		 	
STATIO	NO	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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7	0	ı		ı	11.4	1	ı	I	ı	ı	ı	l	i
7	0	ı		ı		1	ı	ı	ı	ı	ł	1 4	ł
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	6	ı		ı		ı	0.0	ı		ı	1	0.0	ı
		1		ł		ı		ı		ı	ı	0.0	ı
		1		1		1		1		ı	ı	0.0	ı
		ı		i	5	1		ı		ı	1	0.0	ı
	0	1	0.0	1	21.2	1		í	0.0	J	1	0.0	I
0	0	ı		1		ı		1		ł	I	0.0	ı
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07.	0	ı			\$	1 1			0.0	- 1		ı	1
	÷ 0	l I			- 1					1		ı	ı
120.0	60.09	ı	0.0	0.0	1	0.0	ŀ	12.4	0.0	1		1	ŀ
					Bē	Bathylagus	us wesethi	thi					
- 1					1								
STATIO	ON	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
7.	0.	1	0.0	1	i	11.3		ı		ı	ı		i
7.	0	1		ı	1	÷		١		ı	i		ı
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87.0	60.09	0.0	·		1			ı		ı		1	0.0

TABLE 4. (cont.)

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8 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	STATION		DEC	JAN.	FEB.		MAY	JUNE	JUI.Y	SEP.	OCT.		DEC.
93.00 80.00	01. 0 6			1		1	1	ı		ı		1	1
93.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 5	00 00		ł	•	1			í		ı	9	ı	ı
9.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.0		1	-	ı			0.0		ł		3	ı
93.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 5	0.0		ı	-	1				ı	ł	1	7	ŧ
99.0 55.0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	06	0 2.	ı	_	ţ		٠		ı	ı	1	9	t
93.0 55.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	001 0 0	0 2.	ı		1				1	ļ	I	ı	ı
25.0 0.0 <td>300</td> <td></td> <td>ı</td> <td>_</td> <td>,</td> <td></td> <td></td> <td></td> <td>1</td> <td>ł</td> <td>- 4</td> <td>1</td> <td></td>	300		ı	_	,				1	ł	- 4	1	
93.0 100.0 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0		1	•	1		•		ŧ	ı	•	ı	•
93.0 80.0 2.6	3.0 55	0.0	ı	•		۰	٠	0	i	ı			1
93.0 90.0 2.8	3.0 60	0	I	0	1	0			ı	1	ı	0	1
93.0 80.0 2.6	3.0 70	0 0	ı	. 0	ı				ı	ı	ı	٠	1
93.0 190.0 2.6	3.0 80	0 2.	ł		1		α		ı	ı	ı		ı
97.0 100.0 1	3.0 90	0 2.	1		i	1		0	i	1	ı		1
97.0 55.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	2001		ı	•	ı	1			1	ł	1		ì
97.0 60.0 60.0 60.0 7.0 60.0 60.0 7.0 60.0 60	20.0			0					ı	ı			
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TABLE 4. (cont.)

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NOV OCT SEP JULY Leuroglossus stillbius (cont.) JUNE MAY FEB. DEC 255.0 260.0 27 STATION 8833.00 8833.0

TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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MAR.		ı	1	1	i	1	0.0		15.0			•	0					í	ł	i	1 <		3.0		i	1	1 1	ı	1	1	Danaphos	MAR.	12.9 12.9 12.4 14.2 14.2 10.0 12.9	
FEB.		ŀ	ı	ı	1	i	1	ı		ł		٥			ı	I			0	0	9	0		6	0	•			0	0.0	D	FEB.	0.0	ı
JAN.										000		I	1		0.0			ı	I	i	ı	1	ı	ı	ı	í	1	1 1	1	i		JAN.		
DEC.	1				i			0		ı										0							4			0.0		DEC.	0.00	1
NOV.	1	ı	ı	1	ı	,	1 1	İ	ŧ	ŀ	I	ì	I	l	i	ı	ı	ı	ı	i	ı	ı	1	ŀ	i	ı	ı	l	ı	1 1		NOV	0.00	0.0
Z		5	_		•	•	ν c			0	0	å	o o	2.	5.	0	0	5.	ė.	0	0	0	0	0	Š	0	o,	o.	Ď,	0.09		2	25.0 90.0 80.0 39.0 30.0 30.0 40.0	0
STATION	1	17.	7	- 6	. / 1		87	.02	20.	20.	20.	23.	23.	23.	23.	23.	23.	27.	27.	27.	27.	30.	30.	30.	33.	33.	33.	33.	37.	137.0		CTATION	33100000	'n

TABLE 4. (cont.)

				Danap	Danaphos oculatus	latus	(cont.)	 			1	
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
3.0 80.					0.0			1	ı	ı	0.0	١
3.0 90.	0.0	1		ı				I	ı	1		ı
5.0 32.		0.0	8	ł	13.9	- 10		ı	l	0.0	ţ	I
7.0 40.		ı		1		9		ł	1		i	i
7.0 70.		ı		1				ı	ı		ŀ	1
7.0 80.	2.8	ŀ	•	ı	0.0			1 1	1 1		1 1	l
97.0 90.		ì		ı				1 1	i I	4	1	i
00.0 35.	ı			1 1				1 1	! !		1	i 1
00.00	1 -			1 1				1	1		ı	ı
00.00	1 1		•	 			0 0	ı	1	0 0	ı	ı
03.0 70.	1	80.0	0	ı	0.0	0.0	2.5	ı	ł	0.	1	ı
03.0 80.	ı			ı		0		ę,	ı		ı	į
07.0 34.	ŀ			1	ı		ı		ı		ı	1
07.0 35.	ı			í	1	0	ı	0.0	ŀ		I	ı
07.0 50.	ı			ı	ı		I	0	ı		1	1
07.0 60.	ı			I	ı				1		i i	1 1
07.0 70.	ı	ı		1	l I	8		!	1 1		l i	ı
07.0 80.	ı			1 (c 1 C				ı	a	ı	ı
10.0 33.	l i		0 (ı	0.0	ı	0 4		1		ì	ı
10.0 60.	ι			1	0.0	ı			1	- 6	ł	1
10.0 80.	ı			ı		ł			ı		ı	ı
13.0 50.	ı	5.5		ı		ŀ			ı		ı	ı
13.0 70.	i	i	9	1	0.0	ı	0.0		1 1		1 1	1 1
13.0 80.	í		•	l 1	1 1	t I			· 1	۰	1	ı
17.0 60.	ł i	0.1		l 1		1	0 (0 0	ı	0 0	ı	1
17.0 80	ı	ł		ı	1	1			í	0	ı	1
18.0 39.	t			1	ı	i			1		ŀ	ı
20.0 50.	ı					i			ı		í	ı
130.0 40.0	ı	0.0	1	0.0	0.0	I	1	0.0	ı	11.2	I	i
37.0 40.	I		ŀ		1	1	ı	79	I		1	ł
				I	Diplophos	os taeni	18					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
117.0 80.0			2.9] 	0.0	0.0		0.0	ì	ı
				I	Ichthyococcus		spp.					
				4	1						NON	790
STATION	NOV.	DEC.	JAN.	FEB.	7.9K	MAY 	JONE	JULY	SEF.		. NOV.	DEC.
103.0 70.0	l (2.9	0.0	1 1	0.0 I	0.0	0.0	i	1-1	0.0	1 1	1 1
.00)	•					

TABLE 4. (cont.)

				Ichth	Ichthyococcus	s spp.	(cont.)					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
1 1 1		1	{		i i		1	1		1		
13.0 60.	ı	0.0		1 1		1 1		•	1 1		1	l t
13.0 /0.	l i	l I		ı I	· • I	ı	9 4		ı	• 1	1	ı
20.0 20.	1	ı	• •	t	6.3	1		0.0	ı		ı	1
20.0 80	ı	1	2.8	ł		ı	0.0	0.0	1	0.0	1	1
50.	1	0.0	ı	11.6	ŧ	ı	ı	0.0	t		ı	i
				Valen	Valenciennellus stellatus	lus ste	llatus					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
97.6 55.0	0.0		0.0	1	14.3	0.0	0.0	1	ì	0.0	-	ı
				Vir	Vinciguerria lucetia	ria luc	etia					١
STATION	NOV.	i Ç	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
3.0 70.		0.0		0.0				0.0	1	i		
7.0 90.			ı	ı	- 0	. 0	i	0.0	ı	ı		ı
0.0 80.		1		1	0.0			ı	l	ı	2.8	i
0.0 90.	2,	I	0	ı	0.0	0.0	0.0	1 4	1 1	1 1		1 1
0.0 100.		ı	4	l :	c 1 C	0	c		+ 1			ı
93.0 80.0	2 %	1 1		1	0.0	3.0	000	1 1	1 1		0.0	ŀ
3.0 100.	4	1		1	ł			ı	ı	ı		1
7.0 55.		1		ı	0.0			ı	ı	0.0	ı	ł
7.0 60.		ı		ı	0.0	10.4		ı	ı	0.0	ı	I
7.0 70.		I		l	0.0	0.0		ı	1	0.0	t	ı
7.0 80.		ł		ı	0.0	0.0		1 1	l I		1 1	1 1
97.0 90.	a	١٥		! !	(, ,		l I	i I	0.0	1	1
00.0	ı	12.0	• 1	í		0.0		ı	i	0.0	1	1
00.0 50.	į	7		1	0.0	0.0		ı	1	0.0	ı	ŀ
00.0 60.	ı	0.	0.	ı	0.0	8.7		ı	ı	8.0	ı	ı
00.00	I	۳,		ł	Õ	0.0		í	I	0.0	ı	ı
00.00	i		2	Į	83.6	6.2		1	ı	0.0	ı	ı
00.00	1		L	i				ı	ł	59.2	1	I
03.0 32.	ı			ŀ				ı	I	0.0	í	i
03.0 35.	1		N	1	0.0			l (t I	0.0	l i	1 1
03.0 40.	I			Į.	0.0			1 1	}			. 1
03.0 40.	1 1			t I	14.4		000	1 1	1 1	30.0	1	1
03.0 60.	1	. 0		ı	0.0			i	1	32.3	1	ł
3.0 70.	1	152.6	34.7	1	0.0	14.8	22	ı	I	5.6	1	i
03.0 80.	1	9	3.	ł	ı		291.0	1	ı	0.08	1	ı
03.0 90.	1	1	I	ı	ı	ı	97	ı	1	198.6	I	ı

(cont.)

Vinciguerria lucetia

DEC. NOV OCI SEP. JULY JUNE MAR FEB DEC. NOV STATION

TABLE 4. (cont.)

	DEC.	1	1	ł	ı	ı	1	1	ι	ı	ł	ı	i	ł	1	ł	ı		1		DEC.	1	ı	ŧ	ı	1	1	ı	1	ı	١	ł	ı	ı		0.0		1	ł	ł	i		•		8
	NOV.	1	l	ı	Į	1	ı	ı	ı	ŀ	ı	ı	ı	i	i	ı	ı		I		NOV.		0.0	1	2				0.0			0		0		1	ł	I	1	ı	ı	ı	1	ı	I
	OCT.			0	59.0	6	53.	7.	0							, 0	٥٥	•	5	 	OCT.	i 1 1 1 1 1 1	1	1	1	ı	1	1	i	1	ı	ı	ı	ı								0.0			
	SEP.	i	1	ł	1	1	ı	1	ŧ	ł	ŧ	1	ı	1			I	ı	ł		SEP.		1	t	ı	ł	ı	1	1	i	1	ł	ļ	ı	1	1	ı	1	1	1	ı	1	ı	I	1
(JULY		0		0.0	62.		06.		1	C	•	· 		•	5 5	:	g G	-		JULY	0.0	•	1	0.0																	0.0		0	
(cont.	JUNE	ı	1	ı	1	1	ı	i	ı	ı	1	i	ı		1	ı	i	ı	I	ae	JUNE	1 1	í	1	1	ı	1	ı	ı	i	ŧ	ı	ı	ı	1	i	1	1	1	ı	1	ı	1	ı	1
ucetia	MAY	1	ı	1	ł	ı	ı	ŧ	ı	ı	i	1	ı		ı	ı	ı	ě	ı	Sternoptychidae	MAY		1 4			9	8 -		0 (- 4	0.0			
erria l	MAR.		ı		0.0			•	• r :	ı	ı	- 1	. 1	1	ě	i	i	ı	ì	Sterno	MAR.		l	-	y . 1	ı	1	ı	0.0		0.0								•			-		2.	
Vinciguerria lucetia	FEB.		11.2	2	0	•	0 -		8) (•	, * C	0			0		- 4		FEB.	1				•	0	0	0.0	•		1	ı	1	1	i	1	ł	ı	ı	1	1	ı	1	ı
	JAN.		ì	1	1	ı	ı	ı	l 1	1 1		1	ı	ı	ł	ι	j	ı	l		JAN.		i	ì	1	l i	1			ı	. 1				· ~) (*		B 1		0.0			
	DEC.	1		0		0	; ;			,		0	-			0	4	47.	5.		DEC.	1.	11.	-				7		20.0			1.1	0	0 1		ı	0		ı	1		0.0		ı
	NOV.		H				ı	ì	ı	ı	ı	ŀ	ı	ı	ı	ı	1	ı	1		NOV.		í	ı	I	ı	1	ı	1 1	1	1 1	ı	l	1	1		000						1		0.0
	2	1		ם כ	· u	n c	50		5		ດໍເ	0		0	2	3.	0	0.	0.09		1 2	1	0	3	0	50	0 0	5	50	50		• > <	·			,	* 14	· c	10	. 0		35.0	9	0	5
	STATION	1 0	. / 2	. / 7	200	200	30.	30.	30.	33.	33.	33.	33.	33.	37.	37.	37.	37.	137.0		STATION		m.	· ·	ص	0.0	0	. 0	o c	, ,	:	:					י	9 0	2 4			7	7	7	

1	DEC.	3.2	ŀ			0.0				- 0)	ı	ı	1	ı	ı			0	0			0.0					1	ı	١	١	ı	Į	ı	ı	ı	ı	ı	1	ı	1	ı	1	1	ı	
	NOV.	1 1	1	ı	ŀ	ı	ı	ı	1	1					0			ı	ŀ	1	ł	ı	1	i	ı	ı	ı			•	0.0		١	1	i	1	ł	ı	ı	ı	ı	i ł	ı	1	ı	ł	
	OCT.	0.0									• 4 1	ı	1	I	ı	ı	l						•	0.0					1 1		ı	ı	ı		0 1				•	0	•					8 8	
	SEP.	1 1	ŀ	1	ı	ţ	1	ı	ı	1	ı	ι	ı		ı	i I	i	t	ı	ı	I	i	ì	I	I	l	I	l	1	i l	ı	i	ı	ı	ł	ı	ı	ı	I	l l		1 1	1 1	1 1	ı	ı	
1	JULY	0.0		0 0		•	1	ì	1	ı	ı	1	1	l I		ı	I	I	I	ı	ı	ı	ļ	ŧ	ı	١	1	l	i	1	ı	ı	- 1	ı	1	I	í	1		l I	١	ì	1	1 1		ı	
(cont.)	JUNE	1	!	1	ı	- 1	1		а -															0.0										0							0				•	ى ت	•
	MAY	0.0						٠		,		,				0			0		0	6		0.0								0	ı I					ຳເ			•					# C	
Sternoptychidae	MAR.	0.0				0							5 0	0					0	3		9		0.0	7.		0					1	1 1			٠.			* d* (۰		÷ 0	0.0			
Ster	FEB.		ı	1 1	1	. 1	1		i I	ı	I	ı	ı	1	ı	ı	ı	ł	ł	i	t	ı	ı	ı	ŀ	ţ	ı	ı	I	ı	ı	ı	ı	ì	1	ł	4 6	I	i	ı	ł	1	ŀ	ı	ı	, ,	
	JAN.			0.0		9		٠ د				B	٠								Б.						0		2			، م		٠ د			7 .		,	7.						0.00	0
	DEC.		ı								1	ŧ	ı	i	ł	ı	ŀ	ł						3		i	i	1	1	i	ı	ı	1		0.0		I	ı	ı	ł	ı	I	ı	ı	ı	i I	ı
	NOV.		0		,	ı	ı	1	ı	L	35.8	7			0					1	1	1	i	ı					4		9		2°°		I		0			6	2		Ξ.	<u>.</u>		2,0	
	7	0	0	90.0		• •	a	•	·	:	7	2	٠ ش	0	0	0	0	0	28	5	0	. œ	6	0	S	0	5	0	0	0.	0	90.	0	2.	0	2.	9	-	2	5.	0	5.	5.	0.	0	0	
	STATION	7.	7.	87.0	20 (x		6	0	0	0	0	0	0	0	0	0	0	_	-		,	, ~		· ~	<u>ر</u>	m	3	3.	3	3	3	e.	. ₽	5	5.	7	7.	7	7.	7	7.	7.	7.	7.	7	,

TABLE 4. (cont.)

DEC.		1 1	1	ı	ı	ı	ı	ı	ı	i	ı	ı	ı	ı	í		ı	l	ı	ı	1	ı	ı	ı	ı	1	ı	ı	1	- 1	ı	1	ı	1	1	1	i	ı	ł	1		ı	ł	ı	ı	ı	ı	t	ł
NOV.		1	١	l	ł	ŧ	ı	i	ı	ŧ	1	ł	1	ı	1	l	I	i	ı	ı	ı	1	1	ł	1	ı	1	1	ı	1		1	ı	ı	ı	ł	ı	ı	١	(ļ	I	I	l	I	1	ı	ι	í
OCT.	1	0.0									- 0			•												0 1	b			0		0	0			•	0	0		4						0.0			
SEP.		ı	ı	1	Į	ì	ı	ı	ı	i	1	t	1	1	I	l	ı	I	ı	ı	1	ı	i	1	ı	I		1		l	ı	l i	i (. (ı	ı	ı	1	ļ	ı	ı	I	I	ı	1	1	ı	ı
JULY		1	ì	t	ŀ	ł	1	ı	1	i	ı	!	1		ı	i	ŀ	1	1	21.8	11.4					0.0	•	ı ı							•	4	•	4								0.0			
JUNE		1 0	0.0		0.0							•	0		•				0		t	1	ı	ı	1	1	0		•									· ·		, c		9				5.8			
MAY	1	0.0									В	0							ì				0			0.11	0			ı	ı	ı	ı	į	ı	1	i	ŀ	ı	I	ı	ı	I	ı	1	1	ı	ι	1
B. MAR. MAY JUNE		13.4					40.6	- 4	0.0								6	l	ı	1	1	l	ı	ı	ļ	ł	ı	i	1 (•	٠	40.7		•		0.0		ì			0		0	0.0		í	1	ı	1
FEB.		ł	1	1	1	1	ı	ı	ı	1		ı	i	ı	ı	1	i	1	ı	i	1	I	ı	1	l	I	ł	ı	í	ı	t	1	ı	ŀ	ŀ	ì	ı	ł	1	1	i	ı	ı	ı	ì	ı	ı	ı	ŧ
JAN.			0	3	57.4	1.	2	3	-	• •	, ,	•		0	11.4		2	5.9		0			,	. 7	•	14./	, ,	5		0	-	11.4	1	0,	-	÷.	-,		æ	9	2	0.0	0.		9.	8.6			
DEC.	-						2			0		٠, د	0				- 0		•			, , ,			,	12.2		ł			0	11.2	0	2				i	ı	-0				0.0					8.9
NOV.		ı	ı	1	ı	1	1	1	ı	ı	ı	ł	ι	ł	ŀ	1	ı	ı	١	ı)	ı	ı	I	ı	ı	ì	ı	ı	ı	ı	ì	ı	ı	ı	ı	ı	1	ı	1	1	ı	ì	1	ı	ı	1	ı	ł
		0	•	~	0						2	9	0	Š	0	0		0		• •	90	9	e de la	0.0	0	o.	0	0	0	3	4	5	0	2	0	2	0	0	0	5	0	5	0	0	0	0	0	0	0.09
STATION		00.	000	20	000	000				500		03.	03.	03.	03.	03.	20			200		. / 0	07.	. / 0		07.	07.	07.	07.	10.	10.	10.	10.	10.	10.	10.	10.	10.	10.	13.	13.	13.	13.	13.	13.	13	17	17	117.0

					Ster	Sternoptychidae	_	(cont.)				1	
		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
17.	0			2.3	 		1		2.7	į	3.3	ł	i
17.	0	ı	ı		ı	ı	ı		2.8	1	0.0	ı	ı
20.	5.	ŀ			ı	25.5	ı		0.0	ı	0.0	i	ı
20.	0	ı	6.5	0.0	i		ı			i		ı	ı
20.	0	ı			ı	14.0	I	9		ı	0.0	ł	ļ
120.0	70.0	ı	I	17.3	1		t	0.0	υ. 4.υ	I	0.0	ì	1
20.	0	ı	1		1 6		ł			ı	7 - 7	ł	Į į
23.	2.	1			12.0	0.0	I	I		I	0.0	ŀ	I
23.	5.	ı	0.	11.5	ı		ı	ı	o c	1 .	0.0	1	1 (
23.	0	ł			ı	14.8	I	i) -	1	0.0	1	1 1
23.	0	i	0.0	0.0			1 1	l i		l }	0.0	i	1
27.	•	ı	o -	ı	•	1 1	۱ ۱	: 1	٠ ۱ ۳	1		ı	ı
7.7		ı		l		 	ı	1	· -	ı	11.6	ı	ı
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. 1 .				- 1		ı	1	ŀ	0	ı	11.3	ı	ł
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000		ı		ŀ	. ~	10.2	ı	1		1	0.0	ı	١
סר	° c	ı		1			i	ı		1	0.0	i	ł
הר		ı	0 (ı		ı	ş	ı		1	0.0	ı	1
הר		ı	0	ł	9 (ł	ı	ı		ı	0.0	ı	ı
37.	٠ ،	ı	• •	1		ł	1	1		ı	0.0	ı	1
27		ı		1		1	ţ	1		ı	0.0	ı	i
37.	. 0	1		1	0.0	ı	ł	1	5	ı	6.3	1	ı
37.	0	ı		ì		ı	t	ı		I	3.1	1	1
					C	Chauliodus macouni	us maco	uni					
		11012				T A A	MAN	TIME	TTT.V	CAD		NON	DEC
STATION	2	NOV.	DEC.	JAN.	r r.b.	MAK.	TAE	1000	1000				
60.	0	1	0.0	1	1	11.3	1	ı	0.0	l	ŀ	0.0	ı
0.	0.	ı	ł	ı	ı		ı	ı	11.8	I	ı	1	١
33	0	1	ı	ı	ı		I	l	ı	ı	I	l	ı
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- '	٠ د	1	10.9	1 1		! I	l I	1	1	. 1	ı	000	ł
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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	OCT.	10000000000000000000000000000000000000	0.0
	SEP.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1
	JULY	0.00 0.00 0.00 0.00 0.00 0.00 0.00	ı
tomus	JUNE	1	0.0
antrostomus	MAY		0.0
Idiacanthus	MAR.	3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0	•
Idia	FEB.	Aristo	i
	JAN.		2.8
	DEC.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ı
	NOV.	NOV.	•
	7	99 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	80.0
	STATION	63.0 83.0 83.0 83.0 87.0 990.0 990.0 993.0 903.0	107.0

TABLE 4. (cont.)

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NOV. DEC. JAN.
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TABLE 4. (cont.)

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 	NOV.	ı	ı	ı		Ì	ı	I	ļ	ł	ı	ı	ı	ı	ı	l			NOV.	0.0		1	0.0	0.0	0.0	2.7		0.0	ı	1	ŀ	1	1	I	ı	ı	l	l		NOV.		0.0
	OCT.	0			0 0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			OCT.	ı	ı	0.0	1	ı	١	I	ı	1 0	ې د	000		2.7	0.0	0.0	7.9	0.0	0.0	0.0		OCT.		1 1
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_	JULY	Ĭ	7 0 0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		14.1	2.7		0.0			JULY			0.0		I	I	I	I	ł	I	I	1 1	ı	ı	ı	0.0	0.0	0.0	э		JULY	1	0.0
(cont.	JUNE		I	ı	I	1	1	1	ţ	i	ı	ı	ı	1	ı	1	9	ַ	JUME	 	ι	ŧ	0.0		0.0	0.0	1	0.0	0.0	0.0	0.0	900	0.0)	0.0		l	lens	JUNE		1
venter	MAY		ŧ	ı	i	ı	ı	1	ı	ì	ı	. 1		. 1		ı		Paralepididae	MAY	0 0	0.0	0.0		0.0		0.0		0.0								•	i	ı	ps ringens	MAY	-1	0.0
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	z		2.	5	0					0	0	0	0	0	0	50.0	•		2	10	5	5	ر د د	o C	1 c			70.	0	0.	0	Ö	Ġ	0.	· .			50.0		2		53.0
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TABLE 4. (cont.)

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2.6	2.6		•	1	0	ı		- 4		1	ı	1		ı
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13.8	12.0			ł	0.0	1		•						
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8.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	8.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0				ð				•	ı	1		ı	ı
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TABLE 4. (cont.)

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63.0 90.0 90.0 70.0 100.0 80.0	0.0	0.0	0.0	1111	3.0	2.9	0000	1 1 1 1	1 1 1 1 1	0.00	0 0 1 1 1	1111
				οĵ	Scopelosaurus		spp.					1 1 1
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
900		0.0	0.00	 	0000	0.0	0.0	3.0 10.6 0.0	1111	0.0	0.00	1 1 1 1
0.0 /0. 0.0 80. 3.0 70.	1 1 1		000	1 1	3.00	0.00	000	1 1 0 0	111	000	1 1 1	1 1 1
07.0 6 0. 13.0 70. 17.0 80.	1 1 1	0.0	0.00	t t i	0.0		0.0	2.5	1 1	000	1 4	1-1
					Scope	Scopelarchidae	ae					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
117.0 80.0 120.0 60.0		0.0	0.0		0.0	 	2.7	0.0	1 1	0.0	1 1	1 1
				Be	Benthalbella dentata	lla den	tata			 		
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
80.0 70.0 91.5 30.0 97.0 90.0	0.0	0.0	0.0		10.7	0.00	0.0	0.0	i 1	0.0	0.0	0.0
				Rosen	Rosenblattichthys volucris	hthys v	olucris			1		
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
83.0 80.0 90.0 90.0 93.0 100.0 97.0 70.0 97.0 80.0	000000000000000000000000000000000000000		0.0000	1 1 1 1 1 1 1	0.00	0.0 0.0 0.0 0.0	00.0	0,111111	1 1 1 1 1 1 1	2000	2.7	111111

TABLE 4. (cont.)

Rosenblattichthys volucris (cont.)

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07.)		9		ı	•	90	ı	ı	,	ı	ı
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23.	<i>ب</i>	1	0.0	i	0.0	0.0	l		7 .		٠		
130.0		ì	0	I		0.0	ł	ı		I		I	1
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					Scop	Scopelarchoides nichols	ides ni	cholsi					
STATION	-	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
											1		
100.0	80.0	1	0.0	0.0	ı	3.8	0.0	0.0	ı	ł	0.0	ı	
03.	0	I	0	0	ı	ı	0.0	Z. Z	ı	l	0	l	ı
					-	Sconelarchus		SDD.					
						3	•						
-	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	.VCM	DEC.
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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Stenobrachius leucopsarus (cont.)

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Stenobrachius leucopsarus (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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Diogenichthys atlanticus (cont.)

SEP 14.2 20.00 1 DEC

TABLE 4. (cont.)

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TABLE 4. (cont.)

Diogenichthys laternatus (cont.)

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TABLE 4. (cont.)

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07.0 80.	1	1	9	i I	1 1	0	•	0.0	ı		ı	1
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137.0 \$0.0 137.0 50.0 137.0 60.0	1 (2.8	1 }	0.08	1 1	1 1	1 1	0.0	1 1	0.0	i i	l I

TABLE 4. (cont.)

Hygophum reinhardtii

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03.0 90.	1	1	ł	1	ı	1	11.4	ì	ı	0.0	ı	l
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07.0 90.	ţ	ı	1 6	ł	ı	ı	0.0	1 0	1 1	9.0	1 1	1
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					Loweina	na rara						
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP	OCT.	NOV.	DEC.
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3.0 60.	0.0	I	0.0	ı	0.0	0.0	0.0	1 1	1 1	10	2.8	1 1
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TABLE 4. (cont.)

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Protomyctophum crockeri (cont.) 66.1 1.55.9 FEB. 113.2 111.8 33.7.8 111.5 111.5 111.5 111.5 111.5 111.5 111.6 112.4 100.0 1 0. 880.00 800.00 STATION 97.0 10000.0 10000.0 10000.0 10000.0 1000.0 1000.0 1000.0 1000.0 1000.0

TABLE 4. (cont.)

Protomyctophum crockeri (cont.)

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Symbolophorus californiensis (cont.)

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TABLE 4. (cont.)

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Tarletonbeania crenularis (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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					Ophid	Ophidiiformes	Ŋ					
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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					Exoc	Exocoetidae						
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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					Cololabis	ois saira	ä					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	oct.	NOV.	DEC.
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					Athe	Atherinidae						
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120.0 22.4	1 1	4.8	0.0	t	0.0	ı	0.0	0.0	ı	0.0	t	ı
					Trach	Trachipteridae	ae					1 1 1
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67.0 60.0		14.7		0.0			 	0.0	ł	ŀ	0.0	ı
		1										

Trachipteridae (cont.)

DEC.		DBC
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OCT.	0000 0000	
SEP.		
JULY	111.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	12.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
JUNE	00000 00000 d	
MAY	12.2 0.0 0.0 2.9 0.0 0.0 2.9 3.5 2.9 5.8 3.2 0.0 0.0 0.0	MAAY
MAR.	- 0.0 0.0 12.0 0.0 0.0 11.6 0.0 0.0 2.0 0.0 2.0 0.0 2.0 0.0 3.0 0.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0	MAR. 2.1 3.0 0.0 0.0 0.0 0.0 0.0 11.3 14.6
FEB.	000	FEB. 11.6 11.6 5.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
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DEC.	11.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	DBE CO.000000000000000000000000000000000000
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(cont.)	JUNE	!	1	ł	I	ı		0	•		٦°،											ж с т с			-			2.6	0			4	i			•			0.0	0		
spp.	MAY	0.0				•	•					•			. 0				0			9	•		0 (3.1				2.					ı	1 1	1 1	ı	ı	
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TABLE 4. (cont.)

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TABLE 4. (cont.)

Scopelogadus bispinosus	FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. DEC.		Macroramphosus gracilis	FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. DEC.	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Syngnathus spp.	FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. DEC.	0.0 0.0 0.0	- 0·0 - 0·0 - 0·0	2 2 0.0 - 0.0	- 0.0 0.0 0.0			- 0.0 - 7.01 0.0	2.1	Agonidae	FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. DEC.	0.0 0.0 - 0.0 - 11.2 0.0 10.6 - 0.0 - 0.0
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inosus	JUNE	0.000011	acilis	JUNE	0.00	p.	JUNE		1	0.0	0.0	0.0	000	0.0	0.0		JUNE	1111
s bisp	MAY	0.00	sus gre	MAY	0.0	thus sp	MAY	0.0	0.0	000	0.0	0.0	0.0	í	1 1	onidae	MAY	10.0
elogadı	MAR.	0.0000000000000000000000000000000000000	orampho	MAR.	000	Syngna	MAR.	0.0	0.0	0.0	0.0	0.0	0.0) (0.0	Ago	MAR.	0.0
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	NOV.	0.00		NOV.	 		NOV.	0.0		1 1	1	1	i !	1	1 1		NOV.	0.0
	STATION	90.0 90.0 93.0 100.0 97.0 80.0 117.0 50.0 130.0 50.0		STATION	100.0 50.0 103.0 70.0 110.0 60.0		AT	5 43.	7.0 32.	7.0 32.	0.0 28.	95.0 28.	03.0 28.	17.0 26.	120.0 25.0 120.0 35.0		STATION	80.0 50.1 83.0 42.0 83.0 44.0

TABLE 4. (cont.)

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e (cont.	MAY	111	a fimbria	MAY	2.3	Cottidae	MAY		ı	ı	ı	1 0	12.8	0.0	2.5	0.0	0.0	0.0	0.0	0.0	20.7	0.0	0.0	0.0		0,0	0.0	0.6	0.0	0.0	0.0	0.0	ı
Agonidae	MAR.	0.0	Anoplopoma	MAR.	0.0	Cot	MAR.		1	1	ı			14.4			0.0	0 0	0						3.4					0.8		V 13	55.9
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TABLE 4. (cont.)

					Cottida	Cottidae (cont.)	(•		1 1 1 1 1 1	 		
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STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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10.0 32.	1 1	•		1 1	0	1	0.0	0.0	ı	0.0	i	1
110.0 34.0	ı	0.0	0.0	1	0.0	ı	0.0	0.0	í	2.6	ı	1
					Cyclo	Cyclopteridae	a)					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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TABLE 4. (cont.)

	DEC.	1		DEC.	ł		DEC.	0.0		DEC.	0000
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a	JUNE	i	tus	JUNE	ı	sn	JUNE	0.0	p.	JUNE	
Hexagrammidae	MAX	0.0	elongatus	MAY	ŧ	us pictus	MAY	0.0000	Zaniolepis spp	MAY	000000000000000000000000000000000000000
Hexag	MAR.	t	Ophiodon	MAR.	ı	Oxylebius	MAR.	0.0 12.8 0.0	Zaniole	MAR.	1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	FEB.	5.2	O	FEB.	2.5	0	FEB.	4.9		FEB.	0004090
	JAN.			JAN.	 		JAN.	0.0		JAN.	11.8 10.0 10.0 10.0 10.0 10.0
	DEC.	0.0		DEC.	0.0		DEC.	0.0		DEC.	
	NOV.			NOV.	† †		NOV.	0.0		NOV.	0.000.000.000.000.000.000.000.0000.0000.0000
	 	51.0		Z	52.0		Z	60.0 44.0 47.0 32.0		2	550 550 550 550 660 600 600 600
	STATION	70.0		STATION	60.0		STATION	70.0 81.5 81.5 90.0		STATION	63.0 63.0 66.0 66.0 77.0 73.0 77.0 80.0 80.0 80.0 83.0 83.0 83.0 83.0 83

TABLE 4. (cont.)

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Scorpaena spp.	MAX	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	ı	ı	i	í	ı	ı	j	١		1	ş	ı	tes spp	MAY		1	ı	ı	ı	1	ı	i	1	ŀ	I	1 1	1	. 1	i	ı	1	1	I	ı	l	1	ı	1 0	20.0	62.6	• 4	0.0
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TABLE 4. (cont.)

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13.0 70.	ı			ı		ı			ı		ı	I
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17.0 26.	1			i	+	1			1		ı	ı
17.0 27.	ı		0	i	ι	ı	9		ı		ı	i
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17.0 40.	ı		2	1	i	1			1		ı	i
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STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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TABLE 4. (cont.)

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	SEP.	11111111	SEP.	
	JULY	12.6	JULY	
(cont.)	JUNE		JUNE	
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	MAR.	2.5 3.2 3.2 0.0 13.8 6.8 0.0 0.0	MAR.	10.2 10.2
Sebastes	FEB.	0.011111111111111111111111111111111111	FEB.	120 50 10 10 10 10 10 10 10 10 10 10 10 10 10
	JAN.	0.00	JAN.	000000000000000000000000000000000000000
	DEC.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DEC.	000000000000000000000000000000000000000
	NOV.	00000000	NOV.	
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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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TABLE 4. (cont.)

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.0 49	0 0	ı	0.0	1			I		ı	4.6	ı	0.0
.0 50.		ı	5.3	ı			ı		1	2.4	1 1	
.0 51.	0.0	1 :	0.0	1 1) c	t j	200	! 1	0.0	1	6
.0 3/.	•	1	000	ı		0 0	ı		ı	0.0	1	
0 35.	•	0.0	0.0	ı			1		ı	0.0	1	0.0
.0 50.	21.1		0.0	I			ı		1	000	1 1	
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.0 27.	1			1 1	, - , -		0.1	ı	ı	0	ł	•
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0 28.	ı		0.0	ı	7.			1	1	2.1	ı	ı
.0 29.	I		0.0	i	0			l	l	0.0	1 1	1 1
.0 30.	í	0.0	0	ı				1	1 1		1 1	: 1
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.0 28.		1 1		1				ı	1	0.0	ı	ı
0 30.	• •	. 1	0.0	í				ı	I	0.0	ı	ı
.0 28.			0.0	ı	8			ı	ł	0.0	1 1	1 1
.0 29.0	1	0.0	0.0	ł I	35.0		0.0	1 1	1	0.0	í	1
31.0	l I		21.3	ı				i	ı	0.0	ł	ŧ
.0 30.	1		4	ı	ı	0.0	1	0.0	I	0.0	1 1	1 1
.0 30.	ı		0.0	ı	i	0.0	I	0.0	í	1.0	I	ı

TABLE 4. (cont.)

Clinidae (cont.)

DEC.		ı	ı	ı	ı	ı	ı	ı	l	ı	ł	ı	1	1	,	}	ı	ı	ı	ŧ		DEC.	i	ı	ı	1	i	1	i I	1	ı	1	ļ	ı	ı		•	0.0		-									
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OCT.				- 0		,	•	•	0		٠		-	•	•	٠		0		0.0		OCT.	1	ı	1	1	ŀ		I	1	ł	ı) (6		•					
SEP.		ı	2	1	ı	ı	1			i	1	1	ı		ł	i	ı	ı	ı	ı		SEP.	ı	1	١	ı		ı	I	I	ļ	ı	ı	1	ı	4	١	ı	ŧ	1	ŧ	t	ı	1	1	Į I	ı	ı	
JULY		0.0	ı			•		•					•					-	•	12.8		JULY				•		0	6		٠									•		•			0.0				
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MAY		9.2	•	1	1		1	ł	ı	į	ı	ı	ı	I	ı	1	1	1	,	I	Gobiidae	MAY		1	ı			0											-	•		0		-	0.0				
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FEB.		ı	ı			l	I	1	ı	ı	ŧ	ı					-	1	0		•	FEB.	1 4		0	0	0.0				i	ı	ı	ı	ı	ı	ı	ı	1	ı		ı	1	I	I	ı	ı	ı	
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NOV.		1		l	ı	ı	l	1	ı	ı	ı		I	1	ı	1	1		1	l I		NOV.		1		ı	Į	ı	ı	ı	1	ı]						C		0	0	0		0.0			1	
		-		7	5	4.	5	8	6			* 0		5.	17.	8	2	7 4	0	22.0	,		10	D LI	٠ ۵ د	7	3	0	0	3.	ď	1	2	<u></u>	4	4	_	,	ا ر •	, ,	4	9	9	œ	49.0	0	4	7.	
STATION	OT TUTO	100	70/07	110.0	110.0	110.0	110.0	113.0	113.0	113.0	0.00	120.0	170.0	123.0	123.0	123.0	127.0	120.0	130.0	137.0	0.161	STATION	1			3	0	0	3	3	0	0	0	, _	-	-) () (? (٠ د	د	ή.	83.0	.	3	5.	

DEC.	0000m00000000000000000000000000000000	ı
NOV.	111111111111111111111111111111111111111	1
OCT.	455.00	9
SEP.		t
JULY	120.00 0.00 0.00 0.00 0.00 0.00 0.00 120.03	0.0
JUNE	11.3 10.0 10.0 10.0 10.0 10.0 10.0 10.0	0.0
e (cont	00000000000000000000000000000000000000	ı
Gobiidae (cont.	21000 13000 13000 10000 11102 11112 11112 11100 10000	0.0
FEB.		ı
JAN.		
DEC.		
NOV.	0 00 0 000000	ı
z	33200000000000000000000000000000000000	, m
STATION	[\crrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr	10.

TABLE 4. (cont.)

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18.3 - 0.00 - 0.00 0.00 0.00 0.00 0.00 0.0	ı			0.0	ı	9	ı			I		1	i
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0.00	1				}		1			ı		ı	1
0.0	ı						ı		•	ı		ı	ı
0.00 - 0.	l !				1	1	1	9 (ł		1	1
0.0	l l		-	000	ı	ı	ι	٠ -	• (ı		ı	1
0.0			- C	000	1		ı	i		1		i	i
0.0	ĺ		0	0.0		•	ı	0	•	ł		ı	ı
2.5 - 0.0 -	ı				1 1	0	ı	•		ı		1	ı
2.5 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	ţ			000		8	1	0	٠	ı		ı	1
2.5 - 0.0 - 0.0 0.0 - 0.0 0.0 - 0.0 0.0 0.0	ı) c	I	6	t 1	0		. !		ı	ı
13.8	I			2.5	ı		l		•			1	ı
13.8	ı			71	1	6	l	0)		۱ ا	ı
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ı			7)	ı		l			1			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ŀ			0.0	1 0		ı			ł		i 1	1 1
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1			ı	0.0		ı	1	٠	I		I	l
0 - 0.00 - 10.8 - 10.8 - 10.0 - 11.4	1			ŀ			1	ı		ı		ı	ł
0 - 0.0 - 10.8 - 10.8 - 10.0 - 10.8 - 10.0 -	1			i		I	ı	ı		ı		ı	ı
2.5 1.7 - 0.0 - 14.6 - 0.0 - 0	I			ı			ı	I		ŧ		1	1
6 - 0.0 - 0.	ı		9	í			i	i		i		ı	!
2 - 0.0 - 0.	ł		1.	ı		i	ı	ı		ı		I	l
S	1			ı		1	ı	ı		ı		ı	i
1 Costeus aenigmaticus I Costeus aenigmaticus JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV.	1			ı		1	i	ŧ		ł		1	ı
. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV.	ı			1		ı	ı	1		I		ı	l
. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV.					Ico		enigma	ticus					
. JAN. FEB. MAR. MAI JONE JOH SEF. CO		1	0000	2000	Total		VAN	TIME	тт у	CED	E C		DEC
.0 - 11.4	NOV .			OFIN.	r E.D.	. www	TOTAL	1	1001				
	ž			ı	11.4	i	ě	à	i	ì	ı	1	1
	NOV.		1 63	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
JAN FEB MAR MAY JUNE JULY SEP. OCT. NOV.		- 1	i										
FEB. MAR. MAY JUNE JULY SEP. OCT. NOV.	ı				ı	ł	1			i		ı	i
. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV.	ţ				Ι	l	1			1	•	1 1	l I
. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV.	1 1					i !	1 1			1 1	• •	. 1	1
. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 0.0 0.0 0.0 - 4.2 - 0.0 0.0 0.0 0.0 - 2.8 - 0.0 0.0 - 4.9 -	1				ı	ł	ı	0 0		i		1	1
. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 0.0 0.0 0.0 - 4.2 - 0.0 0.0 0.0 0.0 - 2.8 - 0.0 0.0 0.0 0.0 - 4.9 - 0.0 0.0 0.0 0.0 - 6.5 - 0.0	ı			0.0	ı	ı	1			ì		ı	1
3. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 0.0 0.0 - - 0.0 0.0 - 4.2 - 0.0 0.0 - - 0.0 0.0 - 4.2 - 0.0 0.0 - - 0.0 0.0 - 4.9 - 0.0 0.0 - - 0.0 0.0 4.9 - 0.0 0.0 - - 0.0 6.5 - 0.0 0.0 0.0 - 4.7 -	ı		0.0	0.0	ı	0.0	1			i		ı	ı
3. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 0.0 0.0 0.0 0.0 0.0 4.2 - 0.0 0.0 0.0 0.0 4.2 - 0.0 0.0 0.0 2.8 - 0.0 0.0 0.0 4.9 - 0.0 0.0 0.0 4.9 - 0.0 0.0 0.0 4.9 - 0.0 0.0 0.0 4.7 - 0.0 0.0 0.0 4.7 - 0.0 0.0 0.0 2.5 -													

TABLE 4. (cont.)

1	DEC.	111111111111	DEC.	0.00.00.111111111111111
] 	NOV.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NOV.	8 6.
i 1 1 1 1	OCT.	19.0 181.4 19.8 19.8 11.6 2.1 11.1 14.2 14.2 5.2 5.2 61.8 61.8	OCT.	0.0 0.0 0.0 0.0 12.1 10.6 10.6 10.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
 	SEP.		SEP.	
	JULY	000000000000000000000000000000000000000	JULY	14:1 12:0 0:0 2:0 2:0 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1- 1-
cont.)	JUNE	0.0 0.0 0.0 1	JUNE	13.1 13.1 13.1
spp. (cont.	MAY	californica	MAY	000000000000000000000000000000000000000
Halichoeres	MAR.	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	MAR.	
Hali	FEB.	0.000000000000000000000000000000000000	FEB.	0.0
	JAN.	0000 0	JAN.	000000000000000000000000000000000000000
	DEC.	0000000000000000	DEC.	1111110011100011100000
	NOV.		NOV.	000000 00
	STATION	00.0 25.0 00.0 46.0 00.0 45.0 00.0 50.0 33.0 39.0 77.0 33.0 77.0 25.6 00.0 29.0 00.0 29.0 77.0 22.0 77.0 22.0	STATION	11.5 45.0 33.0 444.0 33.0 444.7 33.0 50.0 0.0 80.0 11.5 26.8 11.5 30.0 11.5 30.0 11.5 30.0 11.5 30.0 12.0 50.0 12.0 35.0 12.0 35.0 13.0 32.0 13.0 32.0 13.0 32.0 13.0 32.0 13.0 32.0 13.0 32.0
	ST	333333333333333555555555555555555555555	ST	88888888888888888888888888888888888888

TABLE 4. (cont.)

					3 3								
STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
85	37.2	; 	0.0	0.0	1 1	0.0	8.2	12.8	0.0	i i	0.0	i i	1 1
20.	4	ı	0 0		1		1			ı	2.5	ı	i
20.	0	ı			1		l			ı	2.5	ı	1
27.	2	I		I	0.0	I	ı	ł I		1 1	10.4 د د د	1 1	1 1
27.	ę,	1	•	ı	0.0	1 1	1 1	l I		1		1	ı
1:	40	1 1		l í	0.0	1	1 1	1		I	11.8	1	1
)				Chr	Chromis pu	punctipinnis	nnis					
						i i							
STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
1 -	-	1		1 .		1 4	1 4				0.0	1	1
	; ;		ŧ	• •	ı	•		1		ļ		l	0.0
, ~	4	0.0	ı		1			ι		i		i	0.0
, c	8		ı		ı			1		I	0.0	ı	0.0
-	6			0.0	ı	0.0	0.0	3.1	ı	I	0.0	t	0.0
5.	œ	ı			ı	0	•	•	1			1 1	i I
٠,	٠ 0	ı			í			•	ł I	l I		. !	ı
95	0,	1	0		1 1				0.0	!	33.2	1	ı
10.	n a	i J			ı	•	ì			1	0	1	1
20.	. 4	í	0 0		1		ı		0.0	1	- 4	ı	ı
20.	0	i			ı		1			1		ı	I
23.	5.	I		1		0.0	ı	ł		I	4.1	ı	ı
23.	7.	ı		ı			ı	ı		J	54.2	I	1
23.	8	í		1			1	I		ı	7.87	1	1
23.	6	ı		ı			l	ı	•	I	7.5.1	l	l 1
27.	2.	ł		ı		ł	ı	ı		1	00	l I	
27.	m.	I	9	1		ı	İ	ł			100.5	ı	ŀ
27.	٠,	1		ı		1 1	1 1	1 1	•	ı	113.6	ı	ı
. / 7	e v	1	•	l I		. 1	ı	ı		ŀ	9	ı	1
130.0	35.0	1	0.0	1	0.0	0.0	1	ı		1		1	ı
					Hyp	Rypsypops	rubicundus	snpu					
STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP	OCT.	NOV.	DEC.
23.	5.					0.0			0.0	1 1		1 1	1 1
123.0	37.0			1 1	0.0	0.0	i I	1 1	0.0	1	23.1	1	1
9	•		в										

TABLE 4. (cont.)

Howella brodiei

STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC
113.0 80.0			0.0				0.0	2.3		0.0		
					Brama	a spp.						
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
103.0 35.0 103.0 80.0 130.0 60.0		0.00	12.4	0.0	0.0	0.0	0.0	0.0	 	2.6		
					Cara	Carangidae						
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
20.0 40.	1				0.0		0.0	0.0		3.9		
30.0 27.	1		ı	0.0	0.0	ł	i	0.0	ı	4.2	ı	1
133.0 20.6	1 1	0.0	ł I	0.0	0.0	i I	1 (0.0	1 1	10.3	1 1	1 1
33.0 21.	ı		t	0.0	ı	1	{	0.0	1	15.4	ı	i
33.0 23.	1 1		1	0.0	1	ţ	1.	0.0	I	2.7	ı	ı
37.0 22.	1 1	0 0		0.0	1 1	ii	ı	000	1 1		1 1	1 1
37.0 23.	ı		1	0.0	ı	ı	1	0.0	1	28.3	ı	ı
37.0 35.	ı		ı	0.0	ı	ı	ı		ı		ı	ŧ
					Seriola	lalandi	ŗ					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
90.0 90 10.0 60	0.0			110	12.4	0.0	0.0	0.0	1 1		0.0	
7.0 36.	1 1	000	1 1	000	0.0	1 1	1 1	0.0	1 1	0°0 0°0	1 1 1	1 1 1
				Tra	Trachurus	symmetr	ricus					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
77.0 80.0 77.0 90.0 80.0 80.0 83.0 60.0 83.0 80.0	0.0	0.0	0.000	1 1 1 1 1 1	53.0 0.0 0.0 0.0	0.0000	111111	14.3 0.0 47.0 0.0 11.2 5.5		0.00	0.000111	0.0

DEC. JULY Trachurus symmetricus (cont.) STATION

TABLE 4. (cont.)

				•	Trachui	Trachurus symmetricus	etricu:	s (cont.	(•)				
STATION	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
10	10		1 .	0.0		14.3	ŧ		_	1		1	1
90	ى د	1		0.0	į	54.2	ı	12.3	20.0	ı		i	1
10	6	1		0.0	ı	27.2	ı	0		1		ı	1
10.	5	1	0.0	0.0	ì	8.9	ı	51.8	20.5	ł	0.0	ı	1
10.	0	!			ı	13.3	ı	7		1		I	ı
10.	0	i			ł	ı	ı	6		ļ		1	1
10.	0	ł			1	1	ı			ı		1	ı
13.	S	ı			t	15.2	ı	0		ı		ı	ı
13.	0	ł	0.0		1	45.0	ı		_	1		i	ı
13.	0	ı			ł	13.2	1			ı		ı	1
3	6	ı			ì	0.0	1			I		ļ	ı
25		1	1		ı	1	ı			ı		ı	ı
- 27	• •	ı	- (_	ł	t	1			ı		ı	ı
17	· c	ı	0		ı	1	ł			ı		ı	ı
- 12	•	1			ι	1	ı			ı		i	ı
- 1	•		1		١	ł	1			1		1	1
- 7	٠,				i	12.4	1			ı		ı	1
25	٠, ۱	į			ił	# · · · ·	ı	•		ı		ı	1
20.	٠ د	I			1	26.1		0		1		ı	ı
20.	÷	ı			ı		. 1			ı		ı	1
20.	· •	I			I	ח ע	l 1			ı		ı	ı
20.	0	1	ı		1 1		ı	9,0		ı		ı	ł
20.	:	1			c 1 C					ı		ı	ı
23.	- 1	ı	•		0 1	•	1	ı		١		1	1
63.	o o	I		•	ı	•	ı	ı		ı		1	ı
23.		l		000	ı	2	ı	1		1		ı	ı
		1	8	0		,) i	1	ı		ı		ı	ı
	, ,	1	0	ı	•	7.9	1	1		ı		ı	1
133.0	30.0	1	0	1	0.0		ı	ı	10.0	1	0	ŀ	i
3						•							
					S	Coryphaena	a hippurus	urus					
STATION	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
17	10		1 .	0 0				0.0			0.0	ı	1
33.	· -	1	• (0.0	ı	ı			1	1.5	ł	ı
) (C		1	0.0	1	0.0	1	ı	1	0.0	ı	3.7	1	ı
, c	٠,	1		1	0.0	ı	1	1		ı	5.4	١	ı
137.0	40.0	1		i	0.0	ı	ı	i		ı		I	ı
							1						
						Ger	Gerreidae						1
STATIO	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
130 0	1 0		1 -			0.0			0.0	ı	2.1	ı	i
133.0	21.0	ı	0.0	ı	0.0	•	ı	ı		ı	3.1	I	ı

TABLE 4. (cont.)

Gerreidae (cont.)

STATION	Z	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
133.0 137.0	22.0 20.7 22.0	1 1	0.00	1 1 1	000	111	1 1 1	1 1 1	000	1 1 1	11.3	1 1 1	1 1 1
						Наег	Haemulidae						
STATION	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
i a	<		1			0.0	13.4	 - - - - -	0.0		0-0		0.0
130	. 6	1		000	1	0.0	1	0.0	0.0	ı	7.5	1	
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37.	٠,	1 4	90	1 1	•	1 1		1 1	10.4	1 1	2 & C	1 1	1 1
137.0	23.0	ı		ı	0.0	I	1	ı	14.1	ı	0.0	ı	i
					S	Girella	nigricans	sur					
TA	Z	NOV.		JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
88.5	34.0		0.0	0.0		0.0	13.4		0.0		0.0	 	0.0
					Media	aluna ca	Medialuna californiensis	iensis					
STATION	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
97.0 100.0 107.0	45.0 50.0 70.0	0.0	0.0	0.0		0.0	000	30.7 11.8 2.8	1 1 1	1 1 1	0.0	1 1 1	111
					Can	lolatil	Caulolatilus princeps	sdess					
STATION	2	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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						Scie	Sciaenidae						1
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63.0	52.0 49.0	1 I	9 1	1 1	11.7	1 1	1 1	1 1	00	1 1	1 1	36.8	1 1

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Sciaenidae (cont.	MAY	1 1														0											0 (•	ۍ د •		•	•					
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TABLE 4. (cont.)

Sciaenidae (cont.)

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81.5	44.5	0.0	1 1	0.0	1 1	11.5	0.0	1 1	0.0	1 1	000	1 1	110
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Serranidae (cont.		0.0										0.0)			ı				- 0			0.0			•		1	•		٠	ı	ı	1	1			ė				1	ı	ı	1	į	ì	1
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TABLE 4. (cont.)

				S	Serranidae (cont.)	lae (co	nt.)					
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					Poly	Polynemidae						
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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					Scon	Scombridae						
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
137.0 35.0		0.0		0.0			ı	25.7	ı	0.0	1	1
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STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
137.0 24.0 137.0 30.0 137.0 35.0	111	0.0	111	0.0	111	111	111	542.6 101.6 25.7	l 1 i	0.0	111	111
				S	Scomber	japonicus	sns					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
117.0 60.0 118.0 39.0 120.0 23.0 127.0 40.0 130.0 25.6 130.0 26.0	1111111	0000000	000001111	0.000	11001000	1111111	000001111	0.0 0.0 0.0 0.0 0.0 0.0	1111111	10.0 10.0 2.5 21.3 10.8 2.4 2.2	1111111	1111111
				T	Lepidopus	s xantus	ısi					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
90.0 90.0 110.0 40.0 113.0 40.0 117.0 50.0 117.0 60.0 120.0 50.0	0.0111111	0.00000	0.0000		0.00	0.0	0.0000000000000000000000000000000000000	000000	111111	2.9 0.0 11.9 3.3	7.	111111

TABLE 4. (cont.)

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	STATION	1	23.	23.	130.0	33.		STATION	5.	97.	07.	0.011	37	37.	37.		STATION		0		, m	1	7.	7.	7.	0		° m	3	7.	7.	0			0	83.0	m i	

Peprilus Simillimus Peprilus Simillimus Peprilus Simillimus Peprilus Simillimus DEC. JAN. FEB. 000 000 000 000 000 000 000 000 000 0					DAN DAN	TAN DESCRIPTION OF THE PERSON	DAN	TATAL	УШ.	CED	į į	VOV.	DEC
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No. No.	7.0 90.		ı		ı					ı			ı
No. No.	0.0 60.		ı		ı				ı	ı	ı		ı
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38		1	-	1			i		ı		i	ı
34	В			ı			ı		1	5	ı	0.0
35.	ı			ι			1		ı		i	4.
36	1	0		ı			1		i	-	ı	
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200	rc		0	ı		•	1		ı		ı	ı
5 22	0.1		• 1	1		0.0	1	0.0	1	11.7	1	39.7
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28.0	1	0.0		ı					ı		ı	2
200	ı			ı		- 4		ı	ļ	7.	ı	
30.	1		0	ı	. 4		0.0	ı	1	-	ı	0
32	1			1				ı	i		1	
22.00	0 11	•		ì	•	•		ı	1		ı	2

Citharichthys stigmaeus (cont.)

110.0 170.00 0.0000 0.00 OCT. JULY DEC 0.00 46535 46 STATION 990.0 990.0 990.0 990.0 991.5 993.0 993.0 997.0

TABLE 4. (cont.)

TABLE 4. (cont.)

				7	Hippoglossina	- 1	stomata	cont.	•				
STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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20.	5.	t			1		l			ı		١	i
20.	0.	ł			ì		ı			1		ı	1
20.	0	ı			1		ţ			ı		ı	1
23.	7.	ı		1			ł	i		ı	8	ı	ı
23.	ф ж	1		ı	0.0		ı	ì		ı	9	I	ı
23.	2.	1					ı	1		j		ı	ı
23.	0	1		0.0	1		ı	ı		ı		1	I
27.	4.	ı		1		I	ı	ı		ı		ı	1
27.	5.	1		ı			ι	ı		ı		1	ı
30.	5.	ı		1			ı	ı		l	0	ł	ł
30.	6	ı		1		•	ł	ı		ì		ı	ì
33.	2.	1	8	ı		ı	ı	ı		ı	8	ı	ı
33.	5	1		ι		l	ı	ı		ł	0	ı	1
37.	0	1		ı		ı	ı	1		i	8	l)
37.	2	ı		ı		ł	ı	ı	8	ł ł	8	1 1	1
137.0	23.0	1		1 1		1 1	1 1	1 1	12.8	1	0.0	1	ı
3/.	n	ı											
					Paral.	Paralichthys	i	californicus		 			
STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
1	1 &		1 .		1.7		0.0		0.0	ı	1		ı
0		ı	0.0	1.8				ı		í		0.0	1
1	3		1	0.0	i			ı		I		ı	ı
-	4.		1	0.0	i			i		I		ı	1
-	4	0	ı	0.0	ı		0	i		1 (1 1	c ا د
د	9,0		ı	0.1	I			1 1	9			ı	•
ى د		•	1)	4. C	! 1			1	0 0	ı		1	0.0
, c.	110		ı	0.0	ı			í		I		1	0.0
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5.	7		ı	0.0	ı			ı		ı		ı	I
5.	<u>.</u>			0.0	ι			i		l		1 1	
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-	۸ R	1 ,			1 1	٠ 		l I		ı		ı	• •
7:		ŀ		0.0	1			ı		ı		ı	
88.5	30.4	1	0.0	0.0	I	0.0	0.0	6.2	1 9	1	2.0		000
	_; c	1 1		4.0	1 1	•		1 1		1 1	0 0	1	
0	7	ļ		•		•							

TABLE 4. (cont.)

	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
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0.0 29.	ı		0.0	1				ı	1		1	
0.0 32.0	ı	3.2	0.0	ı	0.0	0.0		ı	\$	0.0	ı	0.0
1.5 26	ı			ı			1	ı	i		1	
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1 5 28	ı) (0.0	1				ı	1		ı	
30 0 5	ı			1	5.8			ı	ı		1	
2000		0		1			- (1	ı	0	1	
3.0 20.	1 1	ם ס	·	1	0	•		ı	١		ı	
3.0 30.	t	0			0		4	ı	1		1	
5.0 28.	ı				8			ı	ı		1	ì
5.0 29.	1		0	ı	ė		0	ı	ı		1	ı
5.0 30.	1			l	5	6		ı	ı	0		
5.0 32.	ŀ			ı			•	ı	ł	8	ı	ı
7.0 28.		ł		ı	-			1	ı		ı	i
7.0 29.	3.5	ı		1			- 6	1	i		1	ı
7.0 20	•	ì		1		-	- 4	ı	ı		ı	ı
7.0 50.7	0	ı		1			1	ı	i		1	ı
7.0				1	0		8	ı	1		ı	ı
0.0	ı		•	ı	•		•	ı	ı		ŧ	i
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3.0 28.	t			I				1	ı	6	1	ı
3.0 29.	1			1				ı			ı	!
3.0 31.	ı	•	٠	ı	χ,			1 4	1		1 1	1
7.0 30.	ı		9	ı	ŝ		ı		ı			
7.0 30.	1	2		ı	ı		ı		ł	o t	ı	1
7.0 31.	ł	6		ı					ı	8	ı	l
0.0 32.	1	-		ı		1			ı		l	i
0.0 33.	1			ì		ı			i		ı	I
3.0 29.	ı	0		1	0.0	ι			ı		ı	ı
3.0 31.	ı			i		1			ı		ı	ı
7.0 25.	ı			1	ı	1			1		ı	I
9.0 33.	1			ı		ι			ı		ı	١
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3.0 35.	ı		ı		0	ı	1		i	•	1	ì
3.0 36.	ı	5	ı			ı	ı		ı		1	ŀ
7.0 32.	1		ı		l	ı	ł		1	٠,	ı	ı
7.0 33.	I	8.1	ı	0.0	1	ı	i	0.0	ı		ı	l
7.0 34.	ı		ı		ı	ı	1		ı		ı	1
7.0 35.	ŧ	4	1		ı	i	ı		1		ı	ı
100				0				•		ì		

TABLE 4. (cont.)

TABLE 4. (cont.)

				sdosdh	Hypsopsetta guttulata	ttulate	(cont.	(
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
		١,	1				0	ı	i	0.0	ı	1
5.0 31.	1 -	7.11	0	1			000	ı	1	9.9	ł	ı
97.0 20.			•	ı))) 	0.0	1	0.0	ı	0.0	ı	ı
.00.00.00.00.	1];]	1	0.0	; ; ;	0.0	0.0	ı	0.0	ı	ı
20.0	1			ı	0.0	ı	0.0		ŀ	0.0	ı	1
20.02	ì		6	ı	0.0	ı	0.0	0.0	ı	0.0	ı	ı
127.0 33.0	1	2.7		0.0	1	ı			ı	0.0	1	1
				Lep.	Lepidopsetta bilineata	ta bili	neata					1
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
50.		0.0		0.0				10.8	1 1	1 1	0.0	1 1
77.0 48.0 87.0 50.0	0.0		0.0	0.0	0.0	10.4	i i	0.0	1	0.0	0 1	0.0
				. 7	Lyopsetta	ta exil	is					! ! !
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
15	i	1 4		0.0	11.1	0.0	1	1	i	1	0.0	1
1.5 44.				1	0.0	0.0	I	2.3	ŧ	0.0	ı	1
1.5 45.	0.0	1		1 1	10.6	o c	1 i		1 1	0.0	LI	1 1
1.5 4b.		l I		1	0.0	0.0	1	0.0	ı	0.0	ı	0.0
3.0 70.		i	. 0	ł	0.0	4	1	0.0	i	1	ı	1 6
0.0 29.				ı	10.5		0.0	ì	l	0.0	1 1	0.0
1.5 29.				1 (000	1 1	li	0.0	1	0.0
3.0 35. 5.0 28.	0.1		0 0	 	7.7	0.0	0.0	ı	ı	0.0	ı	t
5.0 30.	1	0.0		1	13.2	0.0	0.0	ı	1	0.0	1	1
5.0 31.				I	27.5	0.0	0.0	1	1 1	000	1 1	l i
97.0 29.	0.0	1 !		1 1	13.2		0.1	1	ı	0.0	ı	ł
30.00	1 1			ı	11.4	0.0	0.0	1	ı	0.0	1	ı
13.0 32.	1			l	3.1	ı		0.0	i	0.0	1	l I
13.0 35.	ı			1	m c	1	0.01	0.0	i	000	1 1	ı i
120.0 30.0	1 1	0.0	0.0	1 1	0.0	1	2.8	0.0	ı	0.0	ŧ	i
				Mic	Microstomus		pacificus					
NOT BY BY	MON	Jau	NAT	FEB	MAN.	MAV	TIME	TULY	SEP.	OCT.	NOV.	DEC.
SIGILON	NO.											
63.0 65.0	1	11.6	1 1	0.0	10	1 1	l I	1 1	1 1	1 1	0.0	i i
3.0 00.	I				•							

TABLE 4. (cont.)

	DEC.		DEC.	1	ı	I	l 1	l I	ı	ı	í	į	ı	I	ı	1	ı		0.0										0.0			1 (0.0	
	NOV.	0.0 0.0 0.0 0.0		101.2	÷,		0	8	8 6			ł	ı	ı	l	i	ł	à	ı	ı	ı	ı	ı	1	ı	1	ı	ı	0.0	1	ı	í	ı	l i	
	OCT.	0.0 0.0		1	ł	I (ı	1	1	1		0.0																		0.0				0.0	
	SEP.	SEP.		ı	I	1	ł	į	ı	ł	ı	ı	l	1 1	ı	l 1	1 (1	l	ì	ı	Į	ì	I	Į	ı	ı	ı	ı	ı	ı	ı	ı	1 1	
•	JULY	12.2 0.0 0.0 0.0 0.0		0.0																							ı	ı	ı	I	ı	ı	1	1	
s (cont.	JUNE	0.0 0.0 Jus		t i	!	ı	1	1	1	1	ı	i		1 1	1 1			ı			1	}	ı	ŀ	ŀ			0.0	0.0		0.0		•	0.0	
pacificus	MAY	0.0 12.2 13.6 3.0 12.2 0.0 3.0 2.9 <i>NS Vetulus</i>		1 1	1	t	ł	ı		0.0																								0.0	
	MAR.	0.0 0.0 0.0 2.9 0.0 0.0 0.0 MAR.		1 1	ı	ı	1	ı		0.0			1 c		م د	י י	·	• •	8	C											ı	ء م	• •	13.2	
Microstomus	FEB.	0.0 0.0 		0.0						I	ı	1 !	1	1	ı	ı	ı	i	ı	ł	ı	ŧ	ı		1	1	ı	ı	į i	1	ı	1 1	ı	1	
	JAN.	0.0 0.0 0.0 0.0		1 1	ı	1	ı	1	1	m° 6	0.0	0.0				0	2.3	2.8	0	3	•	٠.		0		0	6	٠ د	13.0					0.0	
	DEC.	0.0 0.0 0.0 0.0	1.	15.4								1 1	1	ł	ı	+	ı	1	ł	ı	ı						0,0		C		0				
	NOV.	0.0 0.0		1 1	ı	I	ı	ı	1	ı		7 . 7		0 0		- 0							ı	ı			1		0.1	1	ı	1	ı	1	
	NC	60.0 60.0 80.0 90.0 70.0 70.0	ic	50.0	10	0	2	0	ď	o'r	ű r	ก็ส				_	_	ď	~	_	-		_		:_		۰ _			•	•	• •			
	STATION	70.0 77.0 77.0 77.0 80.0 83.0 87.0 90.0	ic	0.09		0	m	اصا	m a	<u> </u>	5 -	1 _			_		~	~	-	_		_ '	- 1		• -	• _	• _	٠.	•	0	0	0 0			

TABLE 4. (cont.)

Parophrys vetulus (cont.)

STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	ocr.	NOV.	DEC.
5 0 28		1 4	1 4	+	15.4	0.0	0.0	1	1	0.0	1	1
5.0 29.	ı	0.0		ı	0.0	9.0		1	ı		i	ı
5.0 30.	i			ı	53.0	0.0		ı	ı		1	ı
7.0 28.		1		1	11.8	2.3		ı	ı	•	ı	ı
97.0 29.0	0.0	1	0.0	ı	0.0	2.6	2.5	ļ	ı	0.0	ı	ı
7.0 30.				1	-	2.7		ı	ł		ł	i
3.0 30.	1			ı	35.0	0.0		i	ı	•	1	ı
3.0 31.	t			1	11.6	0.0		ı	ì		ı	i
0.0 32.	i		0	ı	24.6	1		1	ı		i	I
0.0 33.	ı			ı	0.0	1		0.0	ı		ı	1
0.0 34.	ı			ı	3.4	1		0.0	ı		ı	ı
3.0 35.	l	0.0		1	3,3	1	0.0	0.0	1	•	ı	ı
7.0 26.	ı			1	1	1		0.0	ı		ı	ı
0.0 30.	ı			ı	11.8	ı		0.0	1		į	ı
				Pla	Platichthys	s stellatus	atus					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
87.0 34.0		0.0	11.2		0.0	0.0		0.0		0.0		0.0
				Pl	Pleuronichthys		spp.					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JOLY	SEP.	ocr.	NOV.	DEC.
120.0 24.0 120.0 40.0		0.0	0.0	1 1	0.0	1 1	5.2	0.0	1 1	0.0	1-1	1 1
				Pleu	Pleuronichthys	hys coe	coenosus					1
STATION	NOV.	DEC.		FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
17.0 45.	1	0.0	2.9		1	1	0.0	0.0	1	0.0	1 1	1 1
133.0 22.0 133.0 23.0	1 1	0.0	i i	0.0	1 1	1 1	Ιί	2.5	1		ı	ı
				Pleur	Pleuronicht	thys dec	decurrens					
STATION	NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
70.		10.6		0.0	0.0	0.0	i 1 1 1 1 1 1 1 1	0.0	 	i 1	0.0) [
87.0 33.0 87.0 60.0	0.0		0.0	1 1	10.8	0.0	1 1	0.0	l t	0.0	i I	0.0

DEC.	ı	0.0	0.0	0.0	0.0	0.0	ı	1	ŧ	ı	1	ŝ	i	1	ı	ı	ı	ı	ı	ı	ı	ı	1	ı	ı	ŧ	ı	ı	ı	ı		DEC.		ı	i	l	I				0.0	
NOV.	1	ı	ı	ı	I	ł	I	I	ı	١	ı	ı	ı	ı	ı	ı	ı	ı	I	1	ı	ı	ı	ŀ	ı	I	ı	ı	ŧ	l		NOV.	0.0		I	i	ı	ll		ı	1	
OCT.		11.2						- 0												2.		6		ä								OCT.						0		0 (2.3	
SEP.		1	ı	ı	ı	I	ı	ı	ı	800	ı	ı	ł	I	ı	ι	ι	ı	i	ŧ	ı	ı	ł	ı	ı	i	ı	ı	ı	ı		SEP.		I	ı	I	Š	1 1	t I	ı	1	
JULY		0.0		ı	ı	t																							0.0			JULY									0.0	В
JUNE		ı	ı	0.0	ı			0.0				- 6			9					ı	ı	ı	1	1	ı	i	1	1	ı	ı	verticalis	JUNE	-	ı	ı	ı	ł	1	1 (1 1	ł	
TECHTOMICAL MAY JUNE	1 4	0.0							i	ı	ı	ı	i	ı	t	ŀ	ı	ı	ł	ı	ı	1	ı	ı	ı	1	ı	ı	t	ı		MAY							0	8	0.0	8
MAR.	1 .	0.0							1	ı	ŧ						- 0		0.0					ı					0.0		Pleuronichthys	MAR.		0.		-						8
FEB.		1	ı	ı	1	ı	ı	ı	1	ı	ı	ı	ı	i	ı	1	ı	ı	ı					1 9					2.7		Pleur	FEB.	5.6		ı	ı	ı	I	ı	 	1 1	
JAN.		0.0														. 0					ì	ı	ı	ł	ı	ı	1	1	ı	i		JAN.		5.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200
DEC.		1		0.0							•					0													0.0			DEC.	0.0	1.9		ı	ı	ı	1	1 -	1	
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TABLE 4. (cont.)

Pleuronichthys verticalis (cont.)

88.5 310.4 40.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SED.	OCT.	NOV.	DEC.
73.5					i		1			-			ı	ı
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25.0 56.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	•		١			ı	2			t	ł		ı	
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25.0 28.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	_		ι			I	,						1	
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25.0 26.9	•	3 6		b .		i		33		ı	ı		ı	
25.0 26.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			ı	0			0			ı	1		ı	
10 10 10 10 10 10 10 10	,		ı			ı							ı	
93.0 28.0			ı			ı				i	ı			
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95.0 28.0	3	~	ı			ı	0		0				1	ı
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95.0 30.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0) .	•		•		1				ı	ı		ı	1
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20.0 24.0 - 0.0 3.9 - 0.0 - 0.0	70.	'n	ı						0	•	ı		ı	ı
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TABLE 4. (cont.)

	DEC.	1 1 1 1 1 1 1 1 1 1	DEC.		DEC.	0001111111111111111111
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	OCT.	7.4 0.0 0.0 0.0 0.0 0.0 0.0	OCT.		OCT.	2.0 2.9 2.9 2.9 11.4 2.8 33.4 33.4 33.4 14.1 10.0 11.8 2.1 2.1 2.1 2.1 2.1 2.1 10.8 11.0 11.0 9.3 14.3 11.6 8.3
	SEP.	111111111	SEP.		SEP.	
nt.)	JOLY	16.8 0.0 10.1 5.6 1.7 0.0 0.0 11.4 6.5	JULY	0.0	JULY	000000000000000000000000000000000000000
is (cont.	JUNE	8.0 0.0 2.8 10.9 - - - - - stictus	JUNE	1 1	JUNE	000000000000000000000000000000000000000
Pleuronichthys verticalis	MAY	#.0 0.0 2.8 - 10.9 	MAY	0.0 rus spp	MAY	0000
hthys v	MAR.	- 0.0 - 11.0 - 0.0 2.5 - 0.0 5.2 0.0 0.0 0.0 0.0 0.0	MAR.	17.9 0 Symphurus	MAR.	
uronic	FEB.	- - 0.0 2.5 0.0 5.2 0.0 0.0	FEB.	5.6	FEB.	0.0000000000000000000000000000000000000
Ple	JAN.	2.5 10.9 0.0 	JAN.		JAN.	0.0000000000000000000000000000000000000
	DEC.	000000000	DEC.	0.0	DEC.	0.00 0.
	NOV.	111111111	NOV.	1 1	NOV.	11121111111111111
	Z	25.0 26.0 30.0 40.0 36.0 33.0 27.0 22.0		49.0		28.0 29.0 33.0 33.0 33.0 80.0 80.0 39.0 39.0 39.0 35.0 35.0 25.0 28.0 28.0
	STATION	120.0 120.0 120.0 120.0 123.0 127.0 130.0 137.0	STATION	0.77.0	STATION	

TABLE 4. (cont.)

	DEC.		ı	ı	ı	ı	i	ı	ı	1		DEC.	1	ı	1	ı	1	1	ı	ı	1	1	ı	ı	i	ı	j		1	ı	ı	ı	1	į		0.0		1 1	11.8				0	1	
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	OCT.	1				•			0.0			OCT.	 	ł	1	ı	1	į	ı	ı	ì	ı	1	t	1	ı	ŧ	I	łI	1	1											4	•	0.0	
	SEP.		ı	i	ı	ł	1		ı	ı		SEP.		i	1	ı	ı	ı	ı	i	ı	1	1	ı	ı	ı	ı	1	1 1		1	1	ı	1	ı	Į	ı	I	I	ı	I	1 1	ı	1	
	JULY						0		2.3			JULY									0.0		1	- 8						0		8 1	0 (0										000	
(cont.)	JUNE	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	i	١	ŝ	1	,	!	1	ł	larva	JUNE		1	1	1	ı	í	1	1	1	ı	ı	ı	1	ı	i	ı	1 1	l 1	į Į	i	ł	ı	ı	ı	ŧ	ı	ı	I	I	l	ı	į į	
spp. (c	MAY		ı	ı	1	ł	ı	ļ	ł	\$	ed fish	MAY		ı	t	ł	ı	1	0.0		0.0	0.0								0			0 (17.8	
Symphurus	MAR.		1	1	1	1	. 1	I	ı	ı	sintegrated	MAR.		ŧ	1	0.0		ł	ł	i	ı	0.0		0								8					9				0			0.0	
Sym	FEB.			- 0		•	0		0.0		Disir	FEB.	0.0		-)	12.6							38.6	0	ı	ı	I	ł	ı	1 1	ı	ı	1	ı	ı	ı	ı	ı	ı	1	1	i	1 1	
	JAN.		ı	1	i	1		ı	ı	ł		JAN.		ı	1	ł	ı	ı	ı	ı	1	1	ı	ł	ł						0													0.0	
	DEC.			-		0		· a	34.2	0		DEC.	1 4		, –	12.1	0	•		0.0	•				0.0			7		, 0			1	ı	1	ı	ı	1	ı	1	1	1	ı	0.0	
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	STATION	1	33.	23	, ,	, , ,	37.	3/	137.0	37.		STATION	60.0	· -	· -		7					, M	7.	7	7	7	0	0.	0 0			· -	• -	, ,	 M	3	3	3.	٠ س	m i	ب د	٠, د		83.0	

	DEC.	2 000000000000000000000000000000000000
	NOV.	111111111111111111111111111111111111111
	OCT.	
	SEP.	
t.)	JULY	000000000000000000000000000000000000000
va (cont.	JUNE	
ish larva	MAY	27.20 0.00 0.00 0.00 0.00 0.00 0.00 0.00
£	MAR.	20.0 112.0 120.0 13.0 13.0 13.0 10.0 10.0 10.0 10.0 1
Disintegrated	FEB.	
Di	JAN.	10.00 10
	DEC.	0.00 0.
	NOV.	
	1	1
	NO	332.0 100.0 10

TABLE 4. (cont.)

 	DEC.	
1	NOV.	
	OCT.	13.000000000000000000000000000000000000
	SEP.	
t.)	JULY	22222222222222222222222222222222222222
va (cont.	JUNE	10.00 10
fish larva	MAY	0 0000m 00000c
	MAR.	2000 111.4 + 100.0 200.0 10
Disintegrated	FEB.	
Di	JAN.	11000000000000000000000000000000000000
	DEC.	
	NOV.	
	2	800.0 80
	STATION	1000 1000 1000 1000 1000 1000 1000 100

\$50.0	STATION		NOV.	DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
70.00	0.00		1		1		1		1					
36.0	20.0		1	•				l	, c	000	ı	19.8	ι	1
36.0	20.0	0	1	ł		ı	•			0.0	ł	0.0	ı	ı
337.0	23.0	6	ı	5.0				ı		7.0	1 1	0.0	I	ł
39.0	23.0	~	ı	0.0	ı	•	•	1	ı		: 1		ŧ	į
42.0	23.0	0	ı	0.0	1		0 1	ı	- 1	0.0	1 1	ט . ר ט י	I	I
23.6	23.0	\sim	ì	0.0	1			i	ı	0 0	1	0.11	ł	ı
32.6	23.0		ı	0.0		0	·	ı	ı	, ,	1	0.0	ł	ı
33.0	27.0		1	0.0		0					ì	7.0	ı	ı
35.0	27.0	-	ı	· ~	ı		1 1	l	ł	0.0	ł	8.0	ı	ı
156.0	27.0		1	2.6	. 1	0.0	1	ı	i	0.0	ı	0.0	ı	ı
25.0	0 2 0		1	7 0	l 1		ı	ı	i	0.0	ı	0.0	ı	ı
25.6	0 - 1			9 0	I	0.0	ı	ı	ł	0.0	ı	9.3	ł	ı
25.6	0.0		I	υ (υ (ı	0.0	ı	ı	ı	0.0	f	0.0	1	í
28.0	0.72	٠.	ı	0.0	1	9.11	ı	ı	1	5.1	ł	0.0	1	ı
25.0	20.0	å.	ı	0.0	ı	1.3	0.0	I	1	0.0	ı	7.3	ı	ı
28.0	0.05	٠.	j	2.2	ł	1.9		ı	ı	0.0	ı	2.2	ı	1
29.0	0.0	~	ı	2.7	ı	0.0		1	ł		1		1	
39.00	0.0	_	1	0.0	ı	, L		ı	1		1		ŀ	ı
35.0	0.0	_	i	2.7	ı			ł		0.0	1	0.0	ı	I
### 10.0	0.0		ı		ı	r c		1	I	0.0	ı	0.0	ı	i
50.0 - 0.0 - 0.0 0.0 0.0 0.0 0.0 0.0 0.0	0.0		ı	•	1	•		I	I		ı	0.0	ı	ı
20.6		• _	ı	•	1 1	000		ŀ	1	7,	ı	11.2	ı	ı
22.0 23.0 24.0 25.0 26.0 27.0		٠.	ı		ı	0.0		ı	ı	. A .	1	2.8	ı	ı
22.0	0.0		1	٥. د	I	0.0		ı	ı	0.0	ı	0.0	ı	ı
23.0			t	2.3	ı	0.0	1	ı	1	0.0	ı	5.2	1	١
22.0	0.0		ı	هٔ د	ı	0.0	į	ı	ı	0.0	ı	3.1	1	ı
22.0 20.7 20.7 20.7 20.7 20.7 20.7 20.0 20.0	200	•	I		ı	0.0	ı	ł	1	0.0	ı	0.0	ı	į
22.0	٠ د د د		ı	7.4	ł	0.0	1	1	ı	0.0	ı	2.7	1	ı
22.0 22.0 22.0 23.0 24.0 	ر ا ا		1	0.0	ı	ς.	ŀ	ł	1	0.0	ı	0.0	ı	1
22.0	0.0		ł	0.0	1	-i	ı	{	ì	0.0	ł	0.0	1	ı
23.0	0.7		I	0.0	1	0.0	ı	ı	1	0.0	ŀ	1.9	1	ı
24.0	200		ı	0.0	ı	0.0	i	1	i	0.0	ŀ	2.1	ı	1
23.0	7.0		I	\. 0	ı	0.0	ı	ı	ı	0.0	i	0.0	ı	ı
193.0	200		I	0.0	ı	7 · p	ì	ı	ı	0.0	ı	0.0	ł	ı
60.0	0.7	0	I	0.0	ı	6.1	ł	ı	ı	0.0	ı	0.0	1	ı
Unidentified fish larva Unidentified fish larva NOV. DEC. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. D 50.0 - 0.0 - 0.0 - 30.4 52.0 - 0.0 - 0.0 - 25.6 50.0 - 0.0 - 0.0 - 0.0 65.0 - 0.0 - 0.0 65.0 - 0.0 - 0.0 65.0 - 0.0 - 0.0 65.5 0.0 67.0 - 0.	7.0		I	0.0	ı	0.0	ł	ì	ı	0.0	ı	0.0	ı	ł
Unidentified fish larva NOV. DEC. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 50.0 - 0.0 - 0.0 - 30.4 52.0 - 0.0 - 25.6 50.0 - 0.0 - 0.8 25.6 65.0 - 11.6 - 0.0 - 0.0 49.0 - 11.6 - 6.5 0.0	0 • /		I	9.0	I	2.9	ı	ı	ı	0.0	1	3.1	1	ı
TATION NOV. DEC. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 160.0 52.0 - 0.0 - 0.0 - 30.4 63.0 52.0 - 0.0 - 0.0 - 25.6 63.0 55.0 - 0.0 -						Unid	entifi		Jarva					
NOV. DEC. JAN. FEB. MAR. MAY JUNE JULY SEP. OCT. NOV. 150.0								- 1						
0.0 50.0 - 0.0 - 0.0 - 30 0.0 52.0 - 0.0 - 0.0 - 25 3.0 50.0 - 0.0 - 0.0 - 25 3.0 65.0 - 11.6 - 0.0 0	STATION			DEC.	JAN.	FEB.	MAR.	MAY	JUNE	JULY	SEP.	OCT.	NOV.	DEC.
$egin{array}{cccccccccccccccccccccccccccccccccccc$	0.0	0	ı		ı		ı	 		0 0			30 A	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.0	2.	1		ı		1	ì	ı) C	ı	i	יי טני טני	1 1
$3.0 \ 65.0 \ -11.6 \ -6.5 \ \ - 0.0 \ \ - 0.0 \ \ - 0.0 \ \ - 0.0 \ \ - 0.0 \ \ - 0.0 \ \ - 0.0 $	3.0	0.	ı		j		1	1	ı	٠ ١ د	ı	i .	0.0	1 1
6.0 49.0 6.5 0.04	3.0	5.	ł	4	ı		1	ı	1	ı	ı			l
	0.9	6	ı		ı		ı	1	ı	0	. 1			t

NOV SEP Unidentified fish larva (cont.) JUNE FEB. 11.9 10.0 11.9 10.0 10.0 14.5 14.5 10.0 550.0 55 STATION

00 00 NOV E C SEP. Unidentified fish larva (cont.) JUNE 20.00 3.00 0.00 FEB DEC. STATION 93.0 933.0 9

TABLE 4. (cont.)

Unidentified fish larva (cont.)

120.0 35.0 120.0 40.0 120.0 45.0								1			1	1
20.0 40. 20.0 45.		1		i i i i i		J	- 0		1		ı	1
20.0 40.	1			ı	•	ı			ı		1	í
20.0 45.	I	0			•	ı	0	•	1		ĺ	ı
0 0	ì	0.0		ł	٠	ļ			ı	6	1	ı
20.0	l	0		1	0	1	•		i		ı	ı
20.0 60.	ł		0			ı	0		I	6.0	1	ı
20.0 70.	l	I		ı	•	ı	•		1		ţ	ŀ
20.0 80.	I					ı	0		ı		ı	i
23.0 35.	1		ŀ		0	ı	ı		ł		1	ı
23.0 36.	1		l	0.0		1	1		ı	•	ł	1
23.0 37.	ì)			l	1		i	•	ı	1
23.0 39.	ı		1		1	ŀ	ı		i	٠	l	ı
23.0 42.	ı	- 0	ı		5.	ı	ı		I		ı	ı
23.0 45.	1					i	1		ı		ı	ı
23.0 50	I				4.	1	i		ļ		i	ı
23.0 60	ı		0.0	1	13.8	1	í		ŀ		ı	ı
77 0 77	l					١	I		i		1	ı
27.0 32.	ı		î		1	ı	ı		1		ı	ı
27.0 33.		0	I	•	ì	i	ι	-	l		١	ļ
27.0 34.	I		ı		ı	I	ì		ı		ı	ı
27.0 35.	ì					ı	ı		ı	•	ı	ı
27.0 36.	ı		i		İ	ı	ı		ı		ı	ı
27.0 40.	ì		ı	0	ı	i			ı		١	ı
27.0 45.	ı		ı	-i	t	I	1		}	•	1	ı
27.0 50.	ı		ı			I	ı		١			
30.0 25.	1		1			ı	ı		ı		ı	ı
30.0 26.	1		i			l	ſ		ı		ı	١
30.0 27.	I		i		- 8	ŀ	1		I		ı	I
30.0 28.	ı		ı			ì	ı		l		ŀ	ı
30.0 29.	ţ		l		2	ı	í		1		ı	ł
30.0 35.	ı		ı		27.9	ı	ì		I		ı	ı
30.0 50.	ı		1		0	ı	ι		i		ı	í
30 0 60	ı		1			ı	1	5	1	0	1	ı
33.0 20.	ı		ı		ı	I	ı	6	I		ı	i
33 0 21	1		ı		ı	ı	1	ς.	Ι	ω.	ı	ŀ
3 0 22	1		1		ı	I	ı	4	ı		ŀ	ı
3.0 23.	ł		í		l	ı	1	6	1		Į	ì
3.0 24.	,		f		ì	ı	ı		1		ŧ	ł
3.0 25.			ł		1	i	ı	3	i		ı	I
3.0 30.	i		1		1	ı	ı		{		ı	I
3.0 40.	1	0.0	ı	56.2	1	1	ı		I	9	ı	l
3.0 60.	ŧ		ı	2.	ı	l	ı		l	0	ı	i
7.0 20.	ı		1		ı	ı	1		ı		1	1
7 0 22	ı		ı		ı	ı	ł		ı		ı	ı
7 0 23	1		1		ŀ	I	I		I		1	1
	1	+ L	ı	•	ı	ı	1		I		ı	ı
7 0 25	- 1		ı		ι	í	ŀ		1		i	ı
7 0 50.			ı		ı	1	ı		ı		1	1
7.0 50.	ı					. 1	1		1		ı	1
.00 0.1	ı									•		

Summary of pooled occurrences of all larval fish taxa taken on CalCOFI surveys from 1972 to 1981. Data for 1974, 1977, and 1980 represent single cruises that are part of surveys in 1975, 1978, and TABLE 5.

NAME							
MAILS	1972	1974	1975	1977	1978	1980	1981
,	,						
Albula vulpes	1 76	10	ι α	1 1	l (*	1 1	1 1
Augusticomes Retromens acmainatus		1 1	7.	ı	9 0	1	ı
	٠ ١	1		t	1	ı	1
Sardinons sagax	27	11	51	80		13	28
Rogranlis mordax	548	155	842	47		47	417
Argentina sialis	- 45	9	2	7	3	13	45
	33	œ	40	m		9	31
	44	1	26	1	25	1	18
Nansenia crassa	39	80	17	7		m	13
Bathulagus son.	121	-	41	m		-	49
Jona	l	1		1		ł	1
milleri	13	5		1	8	4	2
ochot	345	13		29		13	244
pacit	9	1	3	1	4	1	38
Weset	9	15	S	20	9	11	127
euroglossus stilbius	387	52		28		22	298
Bathuluchnops exilis		i		I		I	ı
olichopterux longipes	7	ı	ŀ	1	ı	ì	ŀ
stoma	1	1	1	ι	ı	ı	ı
	5	ı	ı	j	-	ı	ı
Stomiiformes	000	_	-	ł	5	1	e
Gonostomatidae	7	10		_	23	7	23
Cyclothone spp.	130	30	165	20	325	38	162
Danaphos oculatus	51	9		2	~	m	17
Diplophos taenia	47	ı	1	1	2	I	i
Gonostoma spp.	ı	1	ı	i	2	ı	7
Spp	7	1	8	2	40	4	18
Valenciennellus stellatus		1		1		1	1
luce	271	48	164	40	379	65	222
veri		ı		ı	\mathbf{c}	I	ı
	217		218	40	371	33	150
	2	10		11	2	12	55
Idiacanthus antrostomus	25			80	29	m	6
intill	5	ı	2	1	22	ı	8
Bathophilus spp.	11	1	1	I	16	1	1
Bustomias spp.	Т	ı	l	ı	7	1	ı
Photonectes spp.	ı	ı	1	1	9	ı	2
Ω	5	ı	ı	1	7	1	2
er.	117	6	59	9	110	11	77
yctophiformes	2	l	ı	I	\$	ı	i
Evermannellidae	1	ı		!	ı	I	П
Paralepididae	32	5	17	l		J	6
Lestidiops ringens	82	16		11	63	11	58
Notolepis risso	10	1	5	Т		ı	5
Stemonosudis macrura	2	1	ı	1	_	ı	i
: () + () ; ()					1		

264 237 168 14 81 1981 1980 24 191 168 20 44 65 179 76 14 1978 212 212 141 19 269 269 63 147 31 58 300 330 23 33 21 21 32 154 1977 1975 151 29 149 351 22 299 120 215 41 141 29 -38 1974 68 201 15 49 2 120 12 21 21 13 388 377 1100 377 377 15 16 24 123 11 11 68 107 107 14 281 25 187 356 1972 Symbolophorus californiensis Rosenblattichthys volucris rarletonbeania crenularis Stenobrachius leucopsarus Diogenichthys spp. Diogenichthys atlanticus Diogenichthys laternatus Myctophum aurolaternatum Protomyctophum thompsoni Notoscopelus resplendens Scopelarchoides nicholsi Ceratoscopelus townsendi Protomyctophum crockeri Taaningichthys minimus Triphoturus nigrescens Triphoturus mexicanus Gonichthys tenuiculus Notolychnus valdiviae Benthalbella spp. Benthalbella dentata Hygophum reinhardtii Merluccius productus Myctophum nitidulum Lampanyctus regalis Sadus macrocephalus Microgadus proximus Lampanyctus ritteri Centrobranchus spp. Lampadena urophaos Benthosema pterota Scopelosaurus spp. Scopelarchus spp. Bolinichthys spp. Hygophum atratum Lampanyctus spp. Breqmaceros spp. TABLE 5. (cont.) Electrona rissoi Parvilux ingens Physiculus spp. Scopelarchidae Hygophum spp. Synodus spp. Loweina rara Aulopus spp. Diaphus spp. Macrouridae Myctophidae Sadidae Moridae NAME

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TABLE 5. (cont.)							
NAME	1972	1974	1975	1977	1978	1980	1981
Ophidiiformes Brosmophycis marginata	9		15		18		
Carapidae Chilara taulori	3 5	l i	17	1 1	1 4	1 1	1 1
Ophidion scrippsae	7	9 1		1 1	7	1 1	⊣ 1
ם מ	-1	1 -	1 =	1	1 <	1 -	1 (
Ceratioidei Lophiidae	۵ ۲	- 1	11	1	r I	٠ ١	1
Gobiesocidae	2	1	10	1 1	e -	! 1	۱۳
Exocoetidae Hemiramphidae	i i	1	٦ ١	1	۱ ۱	1	7
Oxyporhamphus micropterus	31	1 -	7	l I	10	ıπ	7
4	in L	1001	7	۱۲	13		m u
Trachipteridae Entaeniophoridae	22	٠ ١	10	7	7	۱ ۱	۱ ۱
· 14	219	6	130	9,0	181	9 0	79
Poromitra spp. Scopeloberux robustus	CT	1 1	0 1	7 -	25	7 1	17
Q	21	₽.0	5	m I	19	1 6	4 4
7.7	7 7	ı m	8	I	9	4	* ❤*
	17	П	11	ı	- 1	7	7
Anoplopoma timbria Cottidae		S		7	17	2	23
icht	13	e -	15	1 1	9"	നി	7
Cyclopiel juae Hexaqrammidae		4 1		ı	5 2	1	٠ ۱
	10	(1		1 1	1 1	1 1	۷ ب
Oxylebius pictus Zaniolepis spp.	n 90	7	23	4	11	3	υv
Scorpaenidae	2	1		1 1	ıa	1 1	1 4
Scorpaena spp. Sebastes spp.	509	94		30	429	52	379
	18	1 -	-	2	29	2	20
Sebastes jordani Sebastes levis	90	٦ ١		1 1	/ ₄ /8	٦ ١	27 2
macdonald		1		1		1 1	ω (
Sebastes paucispinis Sebastolopus enn	140 65	10	73	11	3 4 8		19
Ω,	900		12	ı	7	1	m 0
Blennioldel Bathymasteridae	J 1	→ 1	5 † ∣	1 1	1 1	1	D 1
Hypsoblennius spp.	30	96	82	1 6	50 23	3.2	19
	88	2 <u>6</u> _	121	10	73	9	38
microuesminae Icosteus aenigmaticus Labridae	12	1 1	- 1	1-1	1 2	1 1	mι
) I						

TABLE 5. (cont.)							
NAME	1972	1974	1975	1977	1978	1980	1981
Halishoores ann			2	i	23		
Oxujulis californica	21	ı	23	1	56	-	33
Semicossyphus pulcher	1 (1	80	1	4	ı	e
Pomacentridae	2 2	ı	1 6	1 -	1 ?	ı	1 5
Chromis punctipinnis	2 -	1 1	7.7	٠ !	14	1 1	4T
hypsypops rubicalidas	0	1	ור	ı	,	1	4 1
Rowella brodiei	7	ı	1	ı	6	1	ı
Brama spp.	7	ı	3	1	7	į	ı
Carangidae	4	1	10	i	ω :	1	٦,
Seriola lalandi	,	ı	3,5	1 -		1 -	T :0
	116	1 1	119	⊣ 1	137	⊣ 1	/8
Cornnhaena hinnurus	٧	_	4	ı	10	ı	m
Gerreidae) r	1 1	ū	1	m	i	m
Haemulidae	-	ı	8	1	12	ı	2
gricans	1 (1	r-1 (~	m,	ł	2
Medialuna californiensis	7	ı	י ניי	ı	⊣ (I	ור
Caulolatilus princeps	1 4	ا ۵	250	<u> </u>	, ווו	1 1	7 [
п		ן נ	1	2 1	4	1	. ~
lin	ı	ŀ	1	1	1	15	64
rnsii	ı	١	ł	ı	1	١	
Seriphus politus	ı	ı	ı	ı	1	1	26
Serranidae	21	ı	55	1	32	7	
Polynemidae	1 k	ı	-	I	1 6	ı	1 -
Gempylidae	2 T	I 1	٠-	1 1	12	l 1	⊣ 1
Decimor rade	٧	ı 1	→ 1	ı	10	ı	1
Ruthunus sop.	r i	ì	١	ı	7 -	ı	1
Sarda chiliensis	4	ı	æ	ł	1 1	1	7
Scomber japonicus	е		80		19		98
Thunnus albacares	2	1		1	1	1	1 (
Lepidopus xantusi	7	ı	10		11	ı	
argen		1 4		ıc	7 2	ı	4.0
Cubicens caerulous	0 † T	۱ ۵	40	7	ر ر	1	77
paucirad	12	ı	ı	ı	+ 1	ı	I
llucidus	5	ı	ı	ı	9	ı	ı
	2	ı	ì	I	ı	I	ı
	11	9		Э		1	31
Tetragonurus cuvieri	13	&	15	2	24	9	æ
Chiasmodontidae	15	ر ا ک	11	4 7 ∣	38	2	20
Olempscopidae	- α	ŀ	ı	- 1	2	1	1
Bothidae) ~~	t	ı	ě	i	ı	1
Bothus spp.		1		ı		ì	
Citharichthys spp.	227	96	357	27	297	09	153
	92	33	m			- 7	
מ	-						

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NAME	1972	1974	1975	1977	1978	1980	1981
Hippoglossing SDD.	1	1	ı	1	7	1	t
	17	8	36	7	21	1	9
Paralichthys californicus	37	25	106	4	47	2	58
Syacium ovale	2	ı	1	1	í	ı	I
Xustreurus liolepis	5	4	12	~	5	ı	3
Gluptocephalus zachirus	15	ı	4	1	22	1	2.4
Hypsopsetta guttulata	7	5	æ	2	7	-	2
Isopsetta isolepis	3	ı	1	ł	7	1	1
Lepidopsetta bilineata	3	ı	က	1	7	ı	1
Lųopsetta exilis	54	ı	20	ı	41	2	57
Microstomus pacificus	17	7	6	1	28	1	14
Parophrys vetulus	53	9	50	1	20	ı	38
Platichthys stellatus	9	1	1	i	7	ı	2
Pleuronichthys spp.	1	1	~	1	ı	1	7
Pleuronichthys coenosus	æ	ı	Э	ł	9	1	2
Pleuronichthys decurrens	80	7	3	1	7	1	7
Pleuronichthys ritteri	80	2	33	1	9	4	11
Pleuronichthys verticalis	21	7	100	2	22	2	24
Psettichthys melanostictus	8	ı	2	ı	7	1	1
Symphurus spp.	20	80	56	7	16	1	80
Disintegrated fish larva	258	27	196	8	224	22	147
Unidentified fish larva	222	21	183	12	162	15	109

TABLE 6. List of stations which were occupied twice in one month during 1975.

Stati	on	Mont	h
93.0	60.0	11	(1974)
63.0	50.0	2	
63.0	52.0	2	
63.0	55.0	2	
63.0	60.0	2	
66.0	49.0	2	
67.0	50.0	2	
67.0	55.0	2	
67.0	60.0	2	
67.0	65.0	2	
67.0	70.0	2	
70.0	51.0	2	
70.0	53.0	2	
70.0	60.0	2	
70.0	65.0	2	
70.0	70.0	2	
73.0	50.0	2	

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